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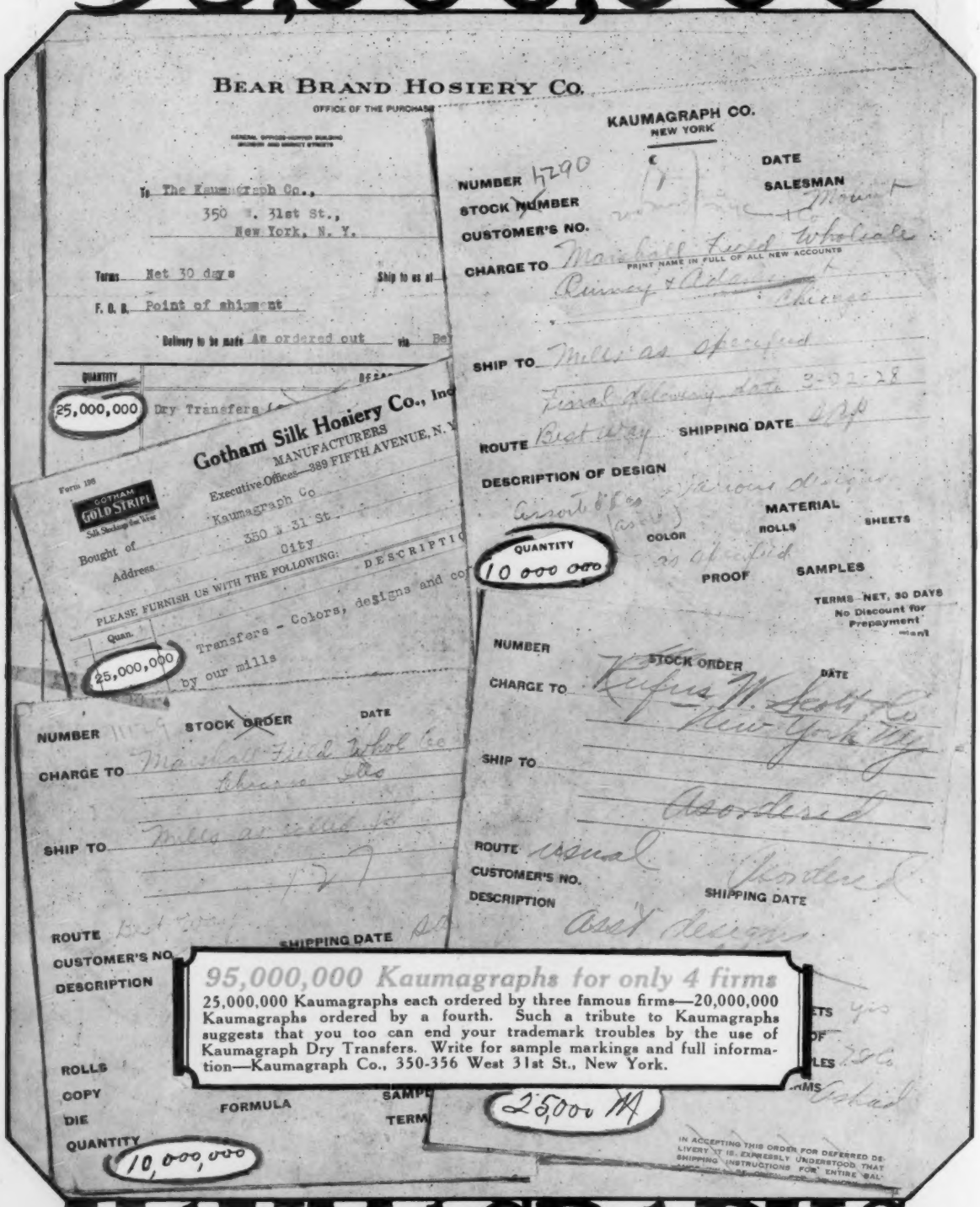
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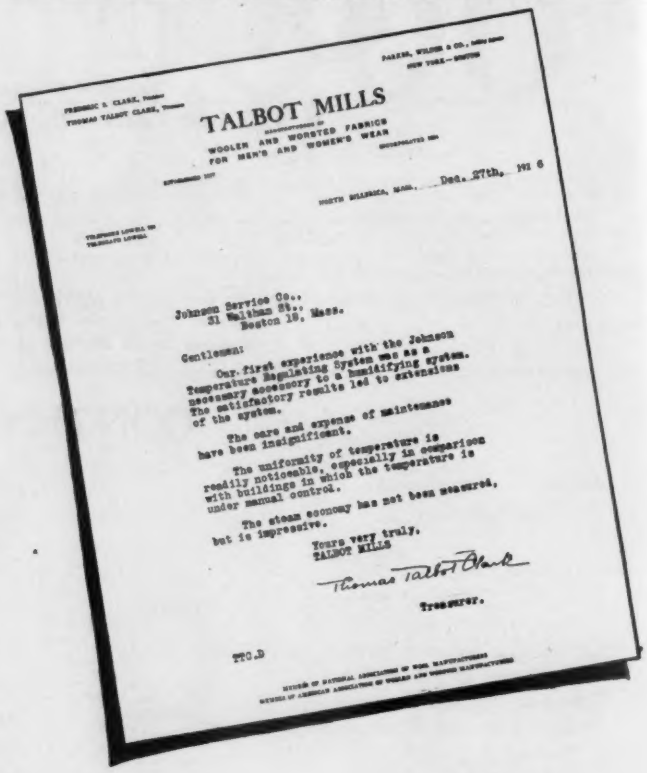

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Spinning Qualities of Some Cottons Grown in the South Atlantic States-

by
HORACE H WILLIS *

Keen competition in cotton manufacture is largely responsible for the increasing demand on the part of the textile manufacturer for better cotton, that is to say, for cotton of known spinning characteristics which fits his particular needs. To meet this demand, various comparative studies of the productivity and manufacturing possibilities of different cottons are being made. The ideal cotton, satisfactory both to cotton breeder and to manufacturer, should possess not only high productivity but also high spinning quality.

Among other problems, the cotton breeder is confronted with that of determining and measuring the factors influencing quality in cotton. It is the purpose of the writer to set forth from the spinning point of view what is meant by the term "spinning quality" and to discuss some of the factors which affect spinning quality of cotton. Although tests of cottons from the various sections of the cotton belt have been conducted by the United States Department of Agriculture, practically all of the data to be presented are based upon recent spinning tests on North Carolina and South Carolina cottons. These tests were conducted at Clemson College, S. C., in cooperation with Clemson Agricultural College.

The term "high spinning quality" as applied to cotton implies primarily three things: First, that the yarn spun from the particular cotton possesses strength, uniformity, elasticity, and brightness; second, that the cotton has a minimum amount of short fiber; and third, that but few broken ends occur while the yarn is being spun. Keeping these three points in mind, let us consider some of the factors which influence spinning quality.

The chief factor generally agreed upon as determining spinning quality in cotton fiber may be divided into two classes: First, those discernible by the cotton classer or manufacturer, such as grade, length, and character, the term, "character" including such qualities as strength, body, and uniformity; second, those factors that may be detected only by the use of the microscope, such as fineness of diameter, convolutions of natural twist, and other physical characteristics.

Studies of the factors influencing spinning quality may be classified under two closely correlated heads: (1) manufacturing tests and (2) laboratory investigations. Let us first take the factors as studied through the medium of manufacturing or spinning tests, and discuss the conclusions drawn from such studies. The first factor, that of grade, is a composite quality determined largely by color, foreign matter, and preparation or ginning. The color classification includes blue and gray, which are due to exposure in the field after opening, and yellow which is largely the result of frost and soil stain. If the cotton is either gray or blue stained, its bleaching qualities are reduced. In case the cotton is yellow tinged or stained, its finishing qualities are not noticeably affected. These colors, however, are generally less desirable for gray goods than is white cotton.

The amount of foreign matter is determined by the weather and by the method of harvesting. Large trash is removed as waste, thus reducing the net weight of spinnable cotton, whereas some of the small or pin trash is spun into the yarn, thus reducing its quality by detracting from its appearance.

The mechanical operation of the gin and the condition of the seed cotton at the time of ginning are important factors influencing grade. Excess moisture in the seed cotton or improper settings and speeds of the gin result in injury to the fiber. Such gin damage not only increases the amount of short fiber waste but also makes the yarn irregular both in strength and in appearance.

Waste in cotton manufacture, made up of foreign matter and short fiber, is usually divided into two classes, spinnable and non-spinnable. The kinds and the amounts of waste of four different lots of cotton are shown in Table 1.

The four varieties listed in the Table 1 are Strict Middling in grade and range in staple length from 1-1/16 inches to 13/16 inch. The first classification, picker waste, consisting of foreign matter, motes and fly, to a large extent reflects grade. Generally speaking, the higher the grade, the less is the picker waste. From the standpoint of spinning quality, picker waste is less significant than is card waste, which is composed chiefly of spinnable short fiber. Fine trash which clings to the yarn is detrimental to its appearance but short fiber lessens yarn strength and thus lowers its quality. The waste of the variety listed in the first column ran very high in short fiber, the card flat strips being 3.59 per cent. The short fiber waste listed in the second and third columns is normal, while the motes and fly (or short fiber) listed in the fourth column is high, being 3.07 per cent. This ex-

*Cotton Technologist, Bureau of Agricultural Economics, United States Department of Agriculture.

TABLE 1.—KINDS AND AMOUNTS OF WASTE BY MACHINE AND BY VARIETY.

Item	Lot numbers			
	1	2	3	3
Grade	S.M.	S.M.	S.M.	S.M.
Length of staple	*Inches* 1-1/16	*Inches* 1-1/16	*Inches* 15/16+	*Inches* 13/16
Picker waste:	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Breaker motes and fly	.99	.90	1.02	1.11
Finisher motes and fly	.99	.65	1.11	1.03
Total visible	1.98	1.55	2.13	2.14
Total invisible	1.77	.32	1.45	.32
Card waste:				
Flat strips	3.59	2.24	1.92	2.04
Cylinder and doffer strips	.99	.61	.77	.75
Motes and fly	1.47	1.74	2.16	3.07
Sweepings	.11	.12	.14	.14
Total visible	6.16	4.71	4.99	6.00
Total invisible	.08	.93*	.40	.80*
Picker and card waste:				
Total visible	7.91	6.17	6.94	7.99
Total invisible	1.85	.59*	1.85	.46*

* Indicates invisible gain.

cessive short fiber may not be a varietal characteristic but may have been caused by unfavorable field or climatic conditions. Invisible waste reflects variations in moisture content.

A second factor which determines spinning quality is that of staple length, a varietal characteristic. Short staples are suitable only for coarse yarns, while the longer staples are required for the manufacture of fine yarns.

A third factor, designated as "character", includes strength, harshness, fiber diameter and uniformity. Strength has long been accepted as a requisite of quality in cotton. Uniformity in fiber length and strength, however, has probably received less recognition as an essential characteristic.

Permit me at this point to digress from the manufacturing tests to the laboratory investigations of uniformity, in which measurements were made by Dr. Cobb's projection method of two hundred fibers of each of several varieties to ascertain the dispersion from the average length. Table 2 lists the fibers of different samples by their respective lengths.

The first four varieties listed in Table 2 are short cottons, while the last one listed is 1-1/8 to 1-3/16 inches in staple. The length range in inches in Table 2 increases regularly by 1/8 inch. The distribution of these fibers indicates the comparative uniformity in length of these varieties. The first variety is the most uniform, 132 of the 200 fibers falling within the length range 3/4 to 1 inch. The second variety is slightly less uniform, having 120

TABLE 2.—DISTRIBUTION OF LENGTH MEASUREMENTS OF 200 FIBERS AND AVERAGE LENGTH BY VARIETY TESTED, CROP OF 1925.*

Variety by number	Length range in inches													Average length	Dispersion from average
	Below 1/4	1/4 to 3/8	3/8 to 1/2	1/2 to 5/8	5/8 to 3/4	3/4 to 7/8	7/8 to 1	1 to 1-1/8	1-1/8 to 1-1/4	1-1/4 to 1-3/8	1-3/8 to 1-1/2	1-1/2 to 1-5/8	1-5/8 to 1-3/4		
														Inches	*Per cent*
1	0	1	4	13	22	72	60	23	5					.850	1.88
2	0	2	6	12	19	56	64	35	6					.865	2.14
3	0	5	4	5	16	38	52	52	22	6				.929	2.15
4	3	7	9	15	29	50	50	25	12					.816	2.68
5	2	4	5	4	6	9	3	13	37	62	41	13	1	1.203	2.50

1* Willis, Horace H., Spinning Tests of Leading Varieties of South Carolina Cottons (Crop of 1925), December 1926, U. S. Department of Agriculture Preliminary Report.

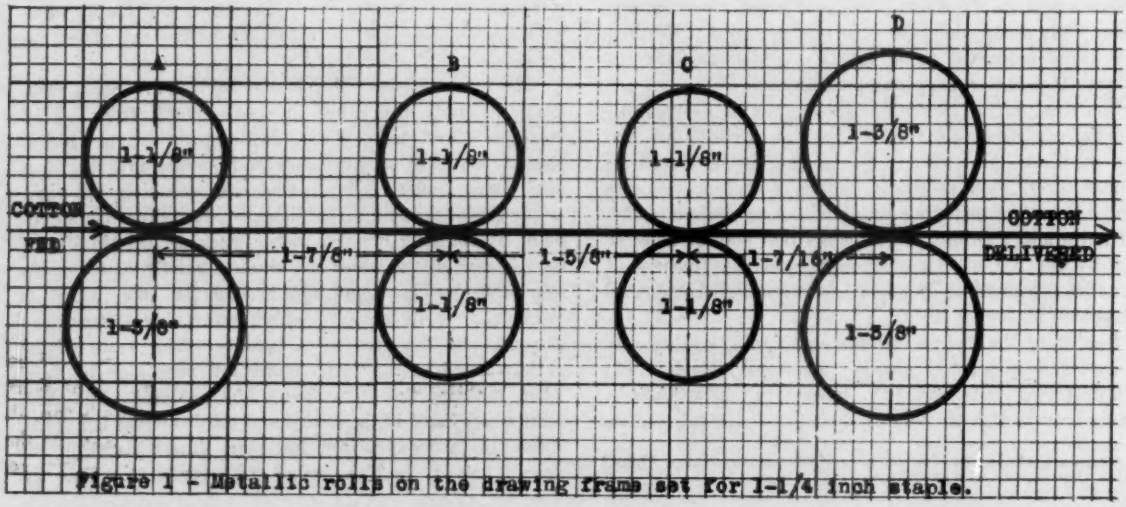


Figure 1 - Metallic rolls on the drawing frame set for 1-1/4 inch staple.

fibers within this same range. The fifth variety lacks uniformity, its fibers ranging from below 1/4 inch in length to 1-3/4 inches.

At this point a brief discussion of the action of textile machines on cotton of irregular staple length, such as variety No. 5 in Table 2, may be of interest. As an illustration, take the drawing frame, the rolls of which may be divided into four sets of two each. (See Fig. 1.) The settings shown in this figure were used for 1-1/4 inch cotton.

Starting with the back set of rolls, each subsequent set has a surface speed greater than that of its preceding set. Necessarily the cotton must be released by the rolls of lower surface speed before the subsequent rolls of higher surface speed seize the fibers; otherwise, high breakage of cotton fibers will inevitably result. Thus, to avoid such breakage, each set of rolls must be set a distance apart greater than the longest fibers in the lot of cotton being used. However, in case of irregular staple length, this distance between the rolls will, of necessity, be too great for the short fibers and they will not be drafted properly, that is, they will not be drawn uniformly into a sliver. On the subsequent process, the roving and spinning frames, the rolls are set more nearly to the length of the staple being used. These frames further attenuate or draw out the sliver, made up of these fibers of sufficient length, into a product uniform in diameter; the short fibers float through irregularly. When the yarn is finally spun from such cotton, these short fibers, distributed unevenly throughout the length of the yarn, serve only as filler and contribute very little to the strength of the yarn. These short fibers also tend to increase the number of broken ends in the spinning process. This end breakage is a factor of considerable economic importance especially from the standpoint either of machine hour or of labor cost. The higher the number of broken ends, the fewer spindles can an operative tend, thus increasing the manufacturing cost per pound of the finished product.

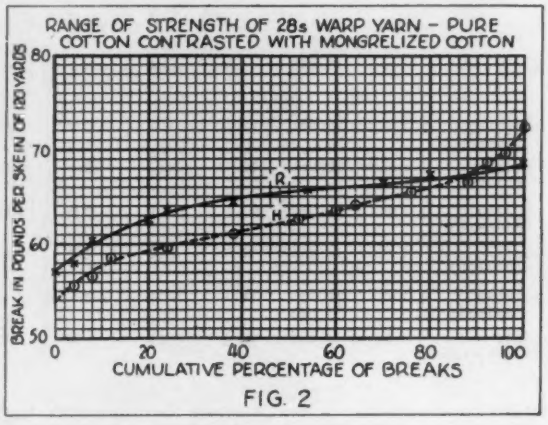


Figure 2.—The strength range of 28s yarn spun from cottons R and H respectively is represented by a smoothed ogive or curve. The greater the angle the curve makes with the horizontal, the more irregular is the yarn. Note the highest and lowest yarn strengths of R, a variety cotton, as compared with those of H, a mongrelized cotton.

Yarn spun from cotton of irregular staple lacks uniformity. Greater uniformity in strength is found in yarn spun from variety cotton than in yarn spun from mongrelized or mixed cotton. (See Fig. 2). These data are taken from tests of cotton other than South Atlantic cottons, *R* representing a variety and *H* a mongrelized cotton.

The smoothed ogive for 28s yarn (Fig. 2) shows the percentage of breaks below any selected magnitude within the limits of each variety. For illustration, approximately 38½ per cent of *R* broke below 65 pounds, while 72 per cent of *H* broke below 65 pounds. The above precentages are determined by reading horizontally from 65 pounds to the curve in question, then down on a vertical line through this point. Similarly any desired readings may be taken.

It is not wholly reliable to base conclusions as to the quality of a yarn upon average strength alone. Two yarns may be approximately equal in average strength but may be widely different in quality because of difference in uniformity, or irregularity. For instance, the average strengths of *R* and *H* are 65.2 and 63.3 pounds respectively.

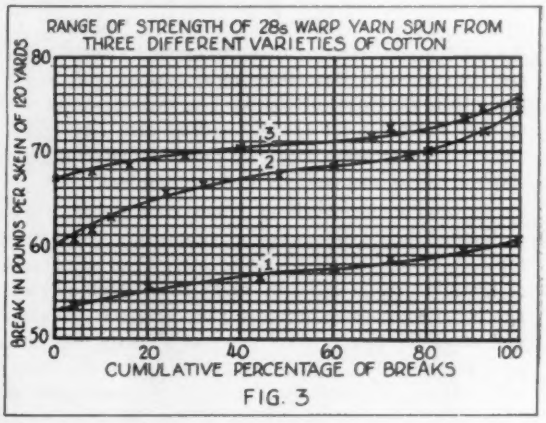


Figure 3.—These curves represent the range of strength of 26s yarns spun from variety cottons. Note the uniformity of curves 1 and 3. The greater the angle the curve makes with the horizontal, the more irregular is the yarn.

R is only 3.00 per cent stronger than *H*, but is definitely superior in quality because of its greater uniformity. Approximately 10 per cent of the yarn from *H* broke lower than the lowest of the *R* yarns. It is these low breaks which give the manufacturer concern. In weaving, it is necessary to put considerable tension on warp threads. This tension, together with the abrasive action of the harness and reed, tends to break these weak yarns, thus increasing machine hour cost and reducing production.

The strengths of 28s yarn spun from three South Atlantic cottons are shown in Figure 3. The yarns spun from varieties No. 1 and No. 3 are exceptionally uniform, while No. 2 is about normal in uniformity. The average strength of No. 3 is approximately 71 pounds, while its lowest break is 67.8 and its highest 75.9. The yarn from No. 1, though not so strong, is even more uniform, its average strength being 57.6 pounds, its lowest break 53.4, and its highest 60.9 The fiber as well as the yarn of these two cottons was very uniform. (See varieties 1 and 3 in Table 2).

Four other varieties of a similar manufacturing series spun into 22s warp yarn are shown in Figure 4. No. 4 is the most uniform in strength, having an average of 99.5 pounds, its extremes being 94.0 and 103.6 pounds. No. 1 is less uniform, its average strength being 100.9 pounds and its extremes 83.9 and 108.7 pounds. Although

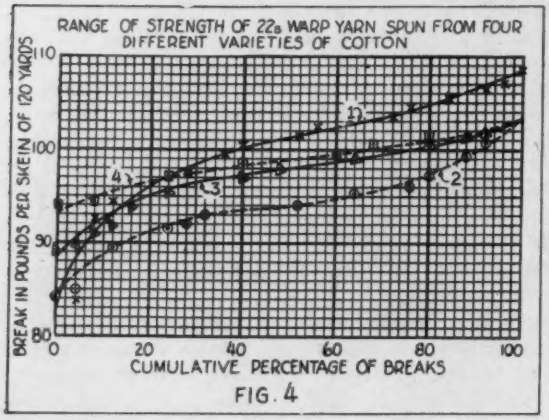


Figure 4.—These curves represent the strength range of 22s yarns spun from four variety cottons. Note the highest and lowest strengths of curve No. 1 as compared with those of Nos. 2, 3 and 4.

the average strengths of these two yarns (Nos. 1 and 4) are approximately the same, eight per cent of No. 1 is lower than the lowest of No. 4. The yarn strengths shown on this chart are all above standard and in spinning quality these varieties rank with those of similar grade and staple from various sections of the cotton belt.

The results of our various manufacturing tests, not only on South Atlantic cottons but on cottons throughout the cotton belt. indicate that the use of mongrel or mixed cotton of irregular staple increases waste, causes high end breakage in spinning, and produces yarn irregular in diameter and strength, thus making it unsatisfactory for general spinning purposes, while many pure strains of cotton are uniform in fiber length and strength, possess good spinning quality and produce yarn of high breaking strength.

The foregoing data and discussion have had to do with the manufacturing tests. The subsequent discussion relates to laboratory investigations, which thus far have had to do mainly with the factor of fiber length and strength as related to yarn strength.

Heretofore, plant breeders have been unable to determine the spinning value of new varieties of cotton, until these varieties had been increased over a period of years and amounts of lint cotton sufficient for spinning tests had been produced. In case these new varieties failed to meet spinning requirements, their development was an economic loss to the grower and to the cotton industry as a whole. Thus a very real need has existed for a laboratory method by which the breaking strength of yarn could be estimated by the use of a small sample of raw cotton, even so small an amount as the product of one plant.

Such a method has been developed in the laboratory of the Bureau of Agricultural Economics. As a first step in this development, a device 2* was invented by Dr. E. E. Chandler whereby the strength of cotton fiber was determined by breaking several thousand fibers in bulk simultaneously. As a second step, the writer tested eight lots of cotton representing seven varieties grown in South Carolina during 1925, not only by the foregoing method but also by spinning tests. As a third step, the data on fiber length and strength as obtained by laboratory methods, and yarn strength data as obtained from manufacturing tests, were correlated and the following formula 3* was derived for estimating the breaking strength of 28s yarn:

$$X = 67.85\ L + .00039034\ S - 18.36$$

where X = estimated strength of 28s yarn in pounds per skein of 120 yards

L = length of staple of cotton in inches

S = strength of cotton in pounds per square inch of cellulose (bulk method)

3* This formula was developed by E. M. Daggit and H. B. Richardson, of the Bureau of Agricultural Economics. (See footnote 1 on Tables 2 and 3).

TABLE 3.—CORRELATION OF LENGTH OF STAPLE STRENGTH OF FIBER, AND STRENGTH OF 28s YARN 1*.

Variety and place grown	Length of staple	Strength of raw cotton per square inch of cellulose	Strength of 28s yarn per skein of 120 yards		Difference between actual and estimated strengths of 28s yarn	
			Actual	Estimated		
	Inches	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Per cent*
Cleveland (Branch)	.875	58,000	65.7	63.8	+1.9	2.89
Trice (Branch)	.875	55,900	71.8	62.8	+9.0	12.53
Sugar Loaf (Branch)	.875	57'800	71.9	63.6	+8.3	11.54
Mexican (Speed)	1.078	50,500	72.1	74.5	—2.4	3.33
Mexican (Branch)	1.063	57,700	72.9	76.3	—3.4	4.66
Mexican (Kingsboro)	1.063	58,100	73.4	76.4	—3.0	4.09
Acala (Branch)	1.125	59,400	75.5	81.2	—5.7	7.55
Mexican (Raleigh)	1.094	55,900	76.6	77.7	—1.1	1.44
Acala (Fayetteville)	1.141	58.600	82.4	81.9	+ .5	.61

1* Willis, Horace H., Spinning Tests of Leading Varieties of North Carolina Cottons (Crop of 1925), December 1926, U. S. Department of Agriculture Preliminary Report.

This estimating formula has since been applied to some forty-three lots of cotton representing varieties grown in North Carolina, South Carolina, and Texas, ranging in staple length from 13/16 inch to 1-1/4 inches. Of these forty-three lots tested by this method, only thirteen showed a variation of more than six per cent between the actual and estimated strengths of 28s yarn. The foregoing preliminary data indicate that fiber length accounts for sixty-one per cent of the yarn strength and that fiber strength accounts for eleven per cent of the yarn strength.

Samples of the raw stock and of the yarn from each of nine lots of North Carolina cottons were tested by the bulk method and by manufactuing tests respectively. These test results and the percentages of difference between the actual and the estimated strengths of 28s yarn are shown in Table 3.

This method has not yet been fully developed and will no doubt be subject to slight change as more extensive tests are conducted and as various factors influencing yarn strength, as yet undetermined, are measured with some degree of accuracy. The results already obtained, however, indicate its possibilities.

2* Device invented by Dr. E. E. Chandler, formerly of the Bureau of Agricultural Economics, United State Department of Agriculture, and of Clemson Agricultural College. For complete description of method, see "A New Method for Determining the Strength of Cotton" by E. E. Chandler, U. S. Department of Agriculture Preliminary Report.

Cotton Manufacturers of the Country to Have Joint Convention at Atlantic City

The joint convention of The American Cotton Manufacturers Association and the National Association of Cotton Manufacturers, to be held at the Hotel Traymore, Atlantic City, N. J., on May 12th, 13th and 14th, merits the attention and attendance of every textile manufacturer in the country, in view of the plans which have been made for the meeting.

This will be the first joint meeting of the two organizations since before the World War, and it is anticipated that existing conditions will attract an unprecedented attendance from all sections.

The terrific struggle through which the industry has

W. B. MacColl, President, National Association of Cotton Manufacturers.

been passing in recent years has resulted in close cooperation among all sections, and a studious endeavor on the part of all to solve the many problems which are a result of the new conditions. The Cotton-Textile Institute, with its possible coordinating and cooperating factors and plans is the physical and tangible result. The suggested operations of this carefully prepared organization, the policies, the officers and directors, the confidence and cooperation expressed in all sections, seem indicative of assured relief for the industry in many of its difficulties.

It is expected that the Cotton-Textile Institute will form the nucleus of formal and informal discussion alike at the Atlantic City meeting, since the members of both associations are interested in its work. There will be two joint sessions of the National Association of Cotton Manufacturers and the American Cotton Manufacturers Association during the convention period at Atlantic City, these to be held under the auspices of the National Council of American Cotton Manufacturers. One will be held in the afternoon, and one in the evening on Friday, May 13th.

The afternoon joint session will have speakers of national note discussing the operations of the industry from various angles, such as the wholesalers, retailers, converters, manufacturers, etc.

The evening banquet will be a joint session of the two Associations, with Walker D. Hines, president of the Cotton-Textile Institute, Inc., as the principal speaker. Several manufacturers will also make short addresses. At this banquet, the members of the Association of Cotton Textile Merchants of New York will be the guests of the two Associations.

On Friday and Saturday, May 13th and 14th, the American Cotton Manufacturers' Association will hold two sessions of its own. On Friday at 10:00 A. M., in the Rose Room of the Hotel Traymore, the opening meeting of the Association will be held. At this time President James P. Gossett will deliver the annual address of the president, and will be followed by Dr. E. C. Brooks, president of the North Carolina State College of Agriculture and Engineering, Raleigh, N. C. Honorable James A. Emery, of Washington, D. C., general counsel of the National Association of Manufacturers, will also address the body.

On Saturday morning at 10:00 o'clock, the American Association will hold its regular business session, which will conclude its official program.

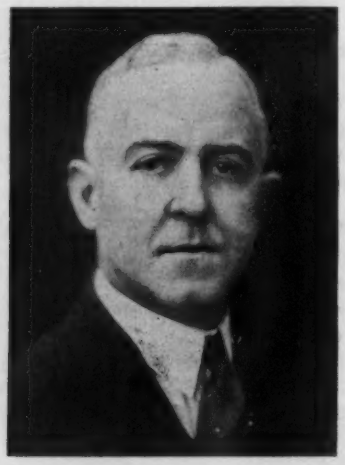
The National Association likewise will hold separate

J. P. Gossett, President, American Cotton Manufacturers Association.

sessions for the transaction of local business pertinent to its own organization and territory. The general sentiment indicates that all of these sessions will develop the most constructive program ever attempted in the history of the industry. Russell T. Fisher, secretary of the National Association of Cotton Manufacturers, in commenting upon the convention, says that "benefits that can be derived through friendly cooperation on the part of the various units of the industry are the aim of its textile leaders. The American Association is made up mainly of cotton manufacturers in the South and the membership of the National Association is largely from the northern states. Many executives identified with these two groups are also members of the Cotton-Textile Institute which is now at work in its endeavors to promote the welfare of the cotton industry of the country.

"Joint gatherings, such as this, are regarded as the best method of having the manufacturers meet each other, discuss their respective problems and to assist each other in the solving of questions affecting themselves and the industry. Such meetings, it is believed, will supplement the work of the Cotton-Textile Institute as the two organizations, themselves, are carrying on activities vital to the sections of the country in which their members are located, but which could not be successfully taken care of by the Institute."

W. M. McLaurine, secretary-treasurer of the American



W. M. McLaurine, Secretary, American Cotton Manufacturers Association.

Association, sees in the joint meeting "a definite and visible expression of an 'entente cordiale' which has already been in existence for some time. The entire textile industry, North, South and East, is united as never before, and

Russell T. Fisher, Secretary, National Association of Cotton Manufacturers.

manufacturers from all sections regard this unification with enthusiasm. The fact that the members of the Association of Cotton Textile Merchants of New York will be the guests of the two Associations at their joint banquet on Friday evening, May 13th, is indeed significant of the broad cooperative spirit and sound economics underlying this new movement. It is only through such cooperation that the textile industry can be made fundamentally sound."

Further details of the program are not available at this writing. As to the entertainment features, golf, bathing, dancing and the local and natural attractions of Atlantic City will appeal to many of those attending. It is understood that a number of the members will bring their families to the convention. Very little formal entertainment is planned for the meeting, due to the fact that the selection of the location has done about all that is necessary, and the arrangements committee felt that the delegates had rather entertain themselves and their friends in ways appealing to them as individuals. However, all that can be done to make the convention profitable and enjoyable is being arranged. The contact of northern and southern manufacturers, all with a common interest, should create history for the industry along many lines, and the thousand or so people attending, as indicated by the advance registrations, will all receive a beneficial reaction from the occasion.

William B. MacColl, treasurer of the Lorraine Mfg. Co., Pawtucket, R. I., is president of the National Association of Cotton Manufacturers, with Russell T. Fisher as secretary and W. Irving Bullard as treasurer. James P. Gossett, president of the Williamston Mills, Williamston, S. C., is president of the American Cotton Manufacturers Association, and Mr. McLaurine is secretary-treasurer.

Draper Corp. Acquires Hopedale Mfg. Co.

B. H. Bristow Draper, treasurer of the Draper Corp., Hopedale, Mass., has issued the following announcement:

The Draper Corporation of Hopedale, Mass., has arranged to acquire substantially all the assets, other than cash and accounts receivable, of the Hopedale Mfg. Co. of Milford, Mass.

These assets include the plant of the Hopedale Mfg. Co., located in Milford, Mass., the plant in Hopedale, commonly known as the "Roper Shop", together with the machinery, equipment and inventory contained in these plants and at the branch department in Greenville, S. C., also patents, patent rights, etc.

The business of the Hopedale Mfg. Co. has been carried on during the past fifteen years under the control of Clare H. Draper and George Otis Draper, sons of the late General Wm. F. Draper, assisted by Jonas Northrop, Randolph Crompton and Frank E. Norcross, and its products have consisted principally of looms for weaving cottons, worsteds and silks. The management of this Company recently decided on account of existing business conditions to arrange the sale of the assets to the Draper Corporation. Mr. Clare H. Draper, treasurer of the Hopedale Mfg. Co. will become a member of the board of directors of the Draper Corporation, having particularly in charge the experimental and development departments, in which he was actively engaged when he formerly held a similar position with the Draper Company.

This transaction brings about the restoration of business relations between two branches of the Draper family which were interrupted about twenty years ago, and which it is believed will be to the mutual advantage of all those interested. Plans for the future concerning the plant in Milford have not yet been developed as the final decision concerning the purchase and sale of the property, as stated above, has only recently been definitely reached.

Forms of Business Organization

BY LUTHER H. HODGES AND HARRIET L. HERRING.

The article below is one of a series which has to do with the fundamentals of business, or, more properly known as Industrial Economics. These articles are being published from month to month. Each one is a unit in itself, although forming an integral part of the entire series.

Practical mill men like practical material and these articles are designed to meet the needs of textile operating executives who are interested in knowing more about the laws governing business and industry. The entire series has already been used by a large cotton mill organization in the South in its educational work, and this organization found the material to be very practical and effective.

Each article lends itself to discussion by groups of mill men, as well as being helpful and interesting reading. Naturally the articles are brief and in attempting to cover this large field, only the most important points have been considered.

The Captain of Industry.

In the building up of these great factories and enterprises, to which we have referred, what were the agents responsible for their success, where was the starting point? Was it capital, was it labor, was it land or something else? The three things mentioned all have their part to play. Capital and Labor are always understood to be necessary and their function is generally understood. What about land as a factor in production? In this sense land is not just so much real estate on which factory buildings are placed. Land includes not only the dry land, but also all those other great gifts of nature, the raw materials, to which we referred in a previous article.

But there is something else besides land, labor and capital that is necesary for the production, for the building up of large factories. This other agent is known as an enterpriser or (as he is called in France) an entrepreneur. He is the business man of America, often referred to as a "Captain of Industry." It is the entrepreneur that sees the need and the opportunity, it is he that thinks out beforehand the ways by which a business can be organized for profit and service. It is his will power, his vision, his energy, his daring that make him willing to assume the risks of starting a business which may lose for him all his money, ruin his reputation and blast the hopes of a lifetime. He is the man who must stake his judgment against business conditions, must study all sides and all angles of business and enterprise before he can be successful.

The enterpriser uses all the other factors of land, labor and capital in getting his business started. He rents the *land,* he borrows the *capital,* and he hires the *labor,* and he assembles these factors for production. He must be able to appreciate what people want to buy; that is, he must be a good salesman and he must also be a good buyer. He needs materials, machinery and men before he can get going. All these things must be in the proper proportion before the business can move forward. His judgment must be of the very highest sort. This statement is better appreciated when we remember that less than 10 per cent of businesses ever succeed in any substantial way.

The business man or enterpriser is a very important individual. As has been stated, he organizes the other forces of business or production; namely, land labor and capital. From the returns of his business he pays rent for the land, interest for the capital and wages for the labor. If there is a balance, it becomes a profit for himself. This, briefly, is the story of the business man, in his organization of a business enterprise.

In our larger organizations, the same man does not necessarily perform all the functions of organization, it may take several different men, but they are all enterprisers. The earlier business organizations were conceived, run and developed by the genius and guidance of a single individual, and that is true in many cases at the present time. The greatest *number* of establishments are those run by single individuals (who own the capital and direct their business personally, although the volume of business done is not so great.

Individual Proprietorship.

When one man owns the business, this is known as the individual proprietorship. It is the simplest form of business organization. In this case, the policy is a one-man policy and this makes for quick decisions and definite action. If there are any profits, they all go to the individual, unless perchance he shares them with his employees. That is up to him, he is the boss. Furthermore, this individual proprietor must bear the burden of losses if his enterprise does not succeed. He may do everything in the business himself, just as does the doctor, the lawyer, the cobbler, the watchmaker, or he may hire workmen, rent land, borrow capital and expand and still be an individual proprietor. The main examples of individual proprietorships are the various retail grocery establishments, the jewelry shops, etc.

There are certain disadvantages in the one-man enterprise which should be mentioned. It is hard for one man to secure the necessary capital for the expansion of his business. Furthermore, a business organization is so varied and complex that it is almost impossible to find one man with ability enough to direct all the various activities of the growing business. The man may be a good producer, but not much of a salesman. He may be a good organizer, but not a very good production man. It seems better in many cases, therefore, to have more than one man to direct the business. This brings up the type of business organization called partnership.

Partnership.

In the partnership, the duties of the two or more partners are generally divided according to the tastes and abilities of the partners. In the partnership, the partners become individually liable for all the obligations of the firm and have to agree that any contract entered into by either partner in the name of the firm becomes binding on every partner. The organization in general is like the individual proprietorship, except that its duties are divided and the directing of the business is by agreement of all the partners. The partnership furnishes more capital and better opportunity for getting additional capital. It furnishes more ability to the organization through the fact of its having more than one man in the organization who is an enterpriser. But, on the other hand, there are drawbacks to this business type. One partner may die and that would mean a re-organization. One man may go to the bad and wreck the business and the other partner becomes responsible for the whole loss. Further, capital is not easily

forthcoming where the lenders of capital do not know the partners very intimately.

It is interesting to note that the partnership type of organization is giving away to the "Company" or corporation.

Corporation.

This type of organization is easily the most popular at the present time and is growing rapidly. The growth of the corporate form of business is ably illustrated by the following statistics by Roberts. "In 1904 there were in the United States 51,097 corporations and 113,946 individual proprietors of manufacturing enterprises. The individuals employed but 755,923 employees and the corporations employed 3,862,698. In 1914 the number of corporations in manufacturing had increased from the 51,097 mentioned above to 78,151 and the individual concerns to 142,436. Then, however, the corporations employed 5,649,646 employees and the individuals only 707,568. This meant an increase of 46 per cent and a decrease for the individuals of 6 per cent. With regard to products—in 1904 the total value of all manufacture was over $14,000,000,000, and the share of the corporations was nearly $11,000,000,000, while in 1914 the corporations claimed twenty billions out of a grand total of twenty four billions." These figures show in a startling way the importance of the corporate organizations.

Forming a Corporation.

To form a corporation a charter must be secured from the State government. Formerly, charters were not issued except by Acts of State Legislature, but it is now handled through some responsible State official. In most states, the charters come directly from the office of the Secretary of State. The charter empowers the association of individuals (if there be several) to elect a board of directors and to act as a single person in the conduct of their business. The corporations are generally chartered on a lifetime basis, so they can continue permanently. The charter states the type of business the corporation may carry on and authorizes it to issue stock. The stock is sold to various people and they are called stockholders or shareholders. These stockholders or owners of the corporation have limited liabilities. They are liable only for the amount they have paid in or subscribed. This differs quite radically, you see, from the partnership.

The advantages of the corporation are many. It makes possible a greater number of investors and, therefore, insures their interest and confidence. It attracts larger amounts of capital and enables large modern plants to be built. It attracts the best of management and officials. It lends itself to large developments, large scale production and greater efficiency. It is a permanent organization. It is organized to carry on and is not affected seriously by the death of a stockholder or an official. It has well been said, "Corporations never die." The corporation is quite flexible since it is not owned by a single person ordinarily. It can change its management. It does not tend to become a "family affair." But, perhaps the greatest advantage it has, and this becomes a public benefit, is its tendency to large scale and economical production. Through its greater resources it can effect short cuts and economies not adaptable by smaller units and can make financial outlays for utilizing by-products and preventing wastes that a smaller concern could ill-afford.

Disadvantages of a Corporation.

On the other hand, the corporation has its decided disadvantages. As stated before, it has a tendency to become large and in its very bigness it has a more difficult labor problem to handle. The larger the organization, the more impersonal becomes the relationship between the management and the workers. This is true in an individual firm, a partnership or a corporation, but is liable to be especially true in a corporation, which tends to become enlarged. Further, with regard to the labor problem in the corporation, it is evident that in the organization of the business that the ownership or actual management is far removed from the employees of the plant. This tends to breed misunderstanding and suspicion.

In the corporation, the responsibilities of managing and directing are hard to place. The organization's bigness makes for a multitude of officials and supervisors whose duties are not always as clearly defined as they might be. By having stockholders, directors, management, superintendents, foremen, supervisors and many others of authority, responsibility and authority are diffused and made more or less ineffective at times.

In many organizations of the corporate form, there are directors or influential stockholders who have connections elsewhere and who, in order to serve their selfish personal ends, influence actions of the corporation to which they belong. The moral standards of men under the guise of corporation responsibilities are not always as high as the standards these same men exercise at other times. Through acts of immorality in business, such as bribing, or influencing Legislatures, judges and juries the corporations have, at times, been in ill repute with the public and have been greatly condemned.

Corporations facilitate what is known as absentee ownership. Under such conditions, the owners of the business cannot possibly appreciate the local problems and local needs. The owners or shareholders may profit from unfair or iniquitous treatment of labor and not even realize what they are doing. They may be putting their local managers in a situation that makes the running of the business unpleasant, if not intolerable, and yet they, the owners, would be so far away that they wouldn't appreciate the local situation. On the other hand, these local managers may, through their own powers, run the business so as to make it detrimental to the owners, to the employees and the public.

Another tendency of the corporation is to develop into a monopoly. In some instances this is an advantage rather than a disadvantage, if it does not hamper industrial progress by destroying competition. This tendency toward monopoly is best explained under the head of Trusts.

Trusts—Various Types.

Just as the partnership was superseded by the corporation, so has the corporation grown into a larger unit called the Trust. Trusts have come about by a combination of corporations, "as now used in the United States," says Mr. Seager, "the term 'trust' applies to any industrial combination which is so large as to be the dominant factor in the branch of production with which it is concerned.

The first form of the trust was a "pool", wherein independent corporations agreed to eliminate competition by reducing production or regulating prices. The profits of such an organization were "pooled" and divided according to a previous understanding. The second type of the trust

was effected by a union of various competing corporations which turned over their stock to a central board of trustees which exchanged for this stock their own *"Trust* certificates," but both the "pool" and the "trustee" type have been declared illegal and have passed by.

The third and present type of trust is known as the "holding company". Under the holding company each corporation maintains its separate existence. To secure unity of action, there is a central corporation and the stock of the central or parent corporation is exchanged for the stock of the separate firms.

Advantages and Disadvantages.

As has been suggested, the trusts were organized to eliminate competition, although in many instances they have effected economies and lower prices than under the competitive system. The earliest trust in the United States was the Standard Oil Trust formed in 1882. This came from a union of oil refineries in two states. The sugar and whiskey trusts followed very soon. These trusts were declared illegal by certain State Supreme Courts and were dissolved. Finally, these groups obtained charters from the State of New Jersey, which State has amended its laws to allow such formations. The United States Steel was chartered in 1901 to combine the leading steel businesses of the country. It was just about this time that promoters and underwriters began to promote trust forming and to get the people of he country to put their money into these enterprises. The failures and successes, the regulations and laws all make a long story, but it is very evident that the trusts which have lasted have made money and stand out as monuments to the organizing and directing genius of American entrepreneurs.

The trusts have effected economies—they have increased productive efficiency, they have reduced advertising expenses, they have saved cross freighting, they have been able to adapt their products to meet demand, they have been able to withstand depression and violent fluctuations. On the other hand, they have been said to influence railroads to give discriminating rates, they have taken advantage of their strength to stifle what little competition there was left and have made unfair dealings with jobbers against their smaller competitors.

Vertical and Horizontal Combinations.

We have been discussing the combination of corporations into a single unit—the trust. These combinations were generally of the "horizontal" kind. For instance, the Standard Oil Trust was a formation of oil refineries in different places, all alike, all doing the same type of business. The same with the American Tobacco Company, all of their tobacco factories doing the same work, all on the same "level", so to speak.

The "vertical" type is illustrated by the United States Steel, which owns its coal mines, its ore mines, its plant furnaces, its steel plants, its shipyards, etc.

Stocks and Bonds.

In the formation of trusts or even corporations the entrepreneur or promoter must have capital with which to work. This capital is secured most generally from the people by the sale of stocks and bonds. Stock is sold in shares, most often at $100 a share. In most organizations one share equals one vote. The profits of the business are divided in proportion to the shares held by individuals. If business is extremely good and large dividends are being passed out, the stock will go above "par" ($100 a share) to $110 or even $160 a share. If returns of the business are small, the stock may go below "par." *Preferred Stock* is a type of stock limited to a certain dividend rate, say 7 per cent, but this 7 per cent is always paid before other dividends or profits are passed out. *Common Stock* takes what is left. It usually gets more than the preferred shares, but sometimes it gets nothing.

Bonds represent borrowed money and not invested money like money given for stock. A corporation sells bonds and guarantees to pay a certain rate of interest at certain stated times. The bond holders do not have voting power nor do they have any say-so about the management of the organization. They simply lend their money at a fixed interest rate. The interest on bonds is paid before any dividends—preferred or otherwise—are paid.

Concerns in a manufacturing business or other type of industry do not bother with selling their bonds to the people of the country, nor do the people go to the industry to purchase bonds. They use the medium of a service called "brokers", who handle stocks and bonds. The organization of brokers in large cities make up the "Stock Exchange", of which you may read more later. There are certain types of stocks and bonds of doubtful character, not sold within the Exchange, but sold on the "Curb Market."

Thorugh the maze of all these organizations of business and industry there is the entrepreneur or enterpriser; necessary, vital, absolutely essential. He is a chief factor in modern production.

Questions.

1. What is an "entrepreneur?" Name some of his duties.
2. How does a corporation get its charter? What does a charter provide?
3. What are the advantages and disadvantages of a corporation? A trust?
4. What is meant by combinations?
5. Why are public utility organizations controlled by government?

New Roller Chain Booklet.

"Reducing Maintenance and Delays in the Textile Industry", the third of a series of booklets discussing the application of roller chain in various industries, which are being issued by the Diamond Chain & Mfg. Co., of Indianapolis, is ready for distribution, it is announced.

This booklet explains the advantages and economies to be realized by the use of Diamond roller chain drives, so will be of interest to engineers and operating executives.

Brown for Upholstery Fabrics.

A light brown of interest for the dyeing of cotton and rayon for use in upholstery and drapery fabrics has been developed in the laboratories of the Newport Chemical Works, Inc., and is now being marketed under the name Newport Light Fast Brown R. It is described as possessing very good fastness to light and good level dyeing properties, and is especially recommended for dyeing unions of cotton and rayon even in heavy shades. It is practically unaffected by iron and Monel metal, it is further said, and therefore suited for use in machines fitted with these metals. It dyes unions of cotton and wool, cotton and silk, to about the same shade at the boil. Dyed at 180 deg. Fahr., somewhat yellower and brighter shades are obtained. It discharges white.

Cockled Yarn and Other Spinning Defects Discussed by the Spinning Section At Union, S.C.

As Reported by R. W. Philip

A really interesting and helpful discussion of the causes of uneven yarn, with particular reference to "cockled" yarn, featured the meeting of the Spinning Division of the Southern Textile Association, held at Union, S. C., on Wednesday, March 23rd. Chairman Carl R. Harris, assistant superintendent, Inman Mills, Inman, S. C., presided in an efficient manner. Although no prepared form of procedure had been arranged, and the meeting followed along the lines of questions presented by the men present, some valuable information developed as a result of the discussion. During the morning session, there was also quite an interesting discussion as to cotton staple and grade.

Carl R. Harris, Chairman

The meeting was held at the Episcopal Parish House, and the local arrangements were in charge of J. D. Jones, general superintendent, Union-Buffalo Mills Co., and T. M. McNeill, general superintendent, Monarch Mills, of Union. Both of these gentlemen made brief talks of welcome after Mr. Harris had called the meeting to order. The attendance taxed the room, representing possibly one of the largest gatherings at a discussion meeting of the Association thus far.

Before beginning the discussion, Mr. Harris called attention to an extensive compilation of figures which had been posted at one side of the hall. This, he said, was the result of a questionnaire he had submitted to the mills, which called for information regarding draft, twist, speeds, settings, etc., for different numbers of yarn. The information had been compiled, representing some 134 different numbers and lay-outs. The compilation was not discussed at the meeting, Mr. Harris stating it would be embodied in his annual report. However, he said, it was posted at Union because "my idea was to give you an opportunity of seeing that information and taking what you like of it, if any of the numbers posted are what you are running." He urged that any who had not filled in the questionnaire do so at once and send it to him, explaining the value of this cooperation in the gathering of this information.

In outlining the plan for the meeting, Mr. Harris said that "my idea is this: As you know, we have gone into the discussion of different rings, etc., and the machinery as a whole and I thought that today we could get together and have an old-time discussion on spinning room management, on the every day problems that come up—cleaning, overhauling, and things like that. I am sure that all of you have questions along this line that you would like to have discussed."

Mr. Harris here passed out several samples of cloth, stating that later he hoped to secure the opinions of those examining them as to the defects therein which were caused in the spinning room. However, the discussion progressed so readily that time did not permit a return to the consideration of this feature at the meeting.

In opening the discussion, Mr. Harris presented the question, "I would like to have listed as many causes in the spinning room for uneven yarn as we can get." He called upon John S. Lockman overseer of spinning, Lockhart Mills, Lockhart, S. C.

Causes of Uneven Yarn.

"A dry roll, to begin with, will cause uneven yarn," responded Mr. Lockman. "Any foreign lint of any kind getting into the yarn is another cause. Lint catching onto the thread at any place where it will catch on will make uneven yarn. The back saddle not being properly in its place, or so far as that is concerned, the stirrup getting out of the saddle and causing it to ride on the roll will cause it; a saddle being turned around sometimes will cause it. Bad cots on the roll; thread picking up cotton off of the lap stick—these are other causes. Any cleaning that you might do where you get lint on the roving or yarn will cause the yarn to be uneven or anything that prevents the roll from turning properly. Worn saddles, the end of the roll being worn, worn roller bars; anything that would retard or keep the rolls from turning freely. Cotton on the steel roll, middle or back, that will slide off onto the roving, is another cause. I believe that is about all that I can think of right now. Of course, you could get

down to some of the finer points and say a traveler could cause uneven yarn. On coarse work the traveler could get sharp enough to cut or chafe the yarn, but on real fine work I do not think that you would have that trouble because when it gets sharp enough to do that it will come off.

"Any foreign lint that might get into the roving coming through the rolls or catching on after it has gone on through the rolls will cause this result, but there is very little of it that will do that because it catches the twist as it leaves the rolls. You could blow lint on the frame and I do not believe you would get two ends on a side that would be broken down by the cotton, but if it is between the rolls you will get plenty."

J. R. Wikle

The chairman next called upon J. R. Wikle, manager of the Consolidated Textile Corp., Shelby, N. C., who said that "one of the things we have done to eliminate uneven yarn is that in the laps at the cards, we make them break down the end and when it has come through thoroughly we let them go ahead. We never creel a slubber except when the bobbins are full and then doff and creel the whole slubber. Another thing we have tried is to keep up with our roll necks, and we do keep them in pretty good shape. I made out a form, and numbered every neck on every frame to correspond with this form, and check up on each roll neck. If it is slightly out I put an *"O"* down; if it is bad I mark *"B,"* and so on. In that way you have an entire picture of every roll in the mill. Also, if you will balance the knock-off on the drawing, so that it is balanced so it will leave a good sized strand out when the drawing hand pieces up it will help a whole lot."

Lumps of cotton around the skewers in the creels stretching the roving; stirrups rubbing against the steel roll; worn roll necks—these were the causes offered by W. T. Morton, overseer of spinning, Mollohon Mill, Newberry, S. C., who added that "the traveler doesn't have so much to do with uneven yarn, as in causing it to look fuzzy. A lump of cotton will make a heavy place in the yarn; lumps catching in between the saddle and the steel roll will also cause this condition. Not picking the top clearers often enough is another reason."

Smith Crow, superintendent, Drayton Mills, Spartanburg, S. C., was next called upon, responding that "most of the things that can cause uneven yarn in the spinning have already been mentioned with perhaps one or two other things. Roll settings, I don't believe, have been mentioned. This is a cause, especially where the middle roll is weighted on the spinning frame. This can cause uneven yarn by being either too close or too wide a setting. Then one other thing is slack bands on the spinning frame. That doesn't of course cause the yarn to be delivered uneven, but it does make slack twist in places. A band may slip just a little bit, and wherever it slips, there is slack twist there and that gives in the goods the appearance of uneven yarn. Another thing that will cause uneven yarn on the spinning frame is having a great deal of vibration in the frame. When the frame is stopped, if the floors are vibrating, the roving will slacken off just a little bit in the creel, and when the frame is started up it will run through double for possibly an inch or two inches."

"We might say that if the roving is uneven to start with, that with improper twist, the more it is twisted, the more uneven it is," observed R. F. Bagwell, superintendent, D. E. Converse Co., Glendale, S. C. "Variation in the spindle speed will cause it to look uneven in places, and, as Mr. Crow says, the bands will have something to do with it.

"Just two or three days ago we had an experience on a piece of goods in which the filling had to break the same as the warp was breaking," Mr. Bagwell continued. "It was on a light pick construction, using hard-twisted yarns, about an average of 8s. Our warp frames caught up and I told the overseer to put one of the frames on filling, and then he put a second one on, and after the second frame was put on, this was breaking about 15 pounds stronger than the old frame. Upon investigation, we found that this first frame had more twist in it and it had a lower spindle speed and the number was weighing perhaps a half a number heavier. After speeding up the spindles, and taking out about three teeth of twist, the strength was brought up 15 pounds, and it made the yarn look much more uniform.

"Trumpets becoming choked is another cause of uneven yarn. We had quite a difference of opinion on twist in roving. Some men say if you have enough to turn the skewer it is sufficient, but you must, in my opinion, have enough to keep it from stretching; although I think that too much twist is as bad as not enough. The roving can be stretched so that the eye cannot notice it, and sometimes a tooth of twist difference will do it. When it is doing that it is weakening the roving."

In setting rolls, if the top roll is set directly over the center of the steel roll, it will bounce from one side to another, and in doing that it will cause thin places to appear in the yarn, according to F. W. Waldrop, overseer of spinning, Drayton Mill, Spartanburg, S. C. As to the roving being stretched, he said that if the creel rod is vibrating it will jerk the roving and make thin places in it and cause it to kink when the frame is running on the loose pulley.

Marshall Dilling

"One thing that hasn't been mentioned that might be of interest to the mills with older machinery is in re-necking the rolls," said Marshall Dilling, superintendent, A. M. Smyre Mfg. Company, Gastonia, N. C. "You are liable, in driving in the neck into the first boss of a stand, to swell it about 1/64 inch. You would not notice it without calipering it. But that difference may cause that boss to be a little larger than the other one. That would not make thick and thin places, but it would make the yarn finer than the adjacent end, and that would show lighter in the cloth. The modern mills with case-hardened rolls of course are not likely to experience any difficulty of this kind because it will split before it will swell, but with the older machinery, where the rolls are re-necked, it would be well to guard against that feature of it."

Uneven piecing-up is one of the biggest causes of the trouble under consideration, in the opinion of L. E. Wofford, night superintendent, Inman Mills, Inman, S. C. Another thing, he said, is with a light traveler when the roving runs out it will run for eight or ten inches, especially

with the new filling wind. However, he said, uneven piecing, by the overseer, second hand and spinner, letting three strands go in for about six or ten inches, is the main thing.

"I think the ground has been pretty well covered," declared A. L. Ellis, overseer of spinning, Pelzer Mfg. Co., Pelzer, S. C., when called upon, "but there are still two or three other things. One is excessive draft, and another is the cotton accumulating over the front roll and hanging down in front like an eye-brow. A lot of gouts and lumps are made in that way. I have found it especially true in using calf-skin rollers."

T. M. McNeill

T. M. McNeil was asked for an expression, answering that he thought "one of the most important points is that of the front steel roll becoming worn and slick so that it does not grasp the roving as securely as a roll with deeper flutes."

"I do not know that I can give you any causes of uneven yarn," responded J. D. Jones, when requested for a statement, "but we have recently had a great deal of experience in working over some old spinning rolls, and I might call attention to the quality of the steel used in making the necks. The average shop, in re-necking the steel rolls, and the men who are journeying around doing this sort of work, are using an ordinary cold-rolled steel or machinery steel for this purpose. We had about 100 frames re-necked, and they lasted a very short while, and before going further I took the matter up with Fales & Jenks as to what steel to use, and the one they recommend has a much higher percentage of carbon it it. We have been using a great deal of it and find it is very satisfactory. But I can tell you this in passing—the person who is re-necking your rolls will raise a howl about it, because it is harder to work; it slows down their operations, but it will outlast an ordinary neck several times."

Peter Quinn of the Draper Corporation was called upon. "They are making a case-hardened joint today," he said. "It is pretty hard to use a worn neck. You cannot take an old roll and make a new one out of it. The only solution is to put in a new roll, and get it from the shop that made the original, and put in a case-hardened joint, and you have something that will last a long time."

"I believe that a belt slipping on a spinning frame will make uneven yarn," said F. D. Lockman, superintendent, Lockhart Mills, Lockhart, S. C., when the chairman called upon him.

Mr. Harris next asked W. J. Britton, superintendent of the Spartan Mills, Spartanburg, S. C., to discuss the subject. "I don't know whether I can talk about it," said Mr. Britton, "but I have made more uneven yarn than anybody else. I think the worst experience I ever had was from chattering rolls, starting and stopping instantly. That was the most trouble we had. Then, in the mixing of your waste, if you mix the waste back irregularly you will have uneven yarn, or if you have any of this sledded cotton you will have uneven yarn, too. The theory is that the short stock slips back and when it gets together it makes uneven yarn. That is the reason Mr. Crow over there at Drayton combs his yarn, so he can get even yarn. And of course, there are the mechanical defects; we have them. Carelessness in dropping stuff into the work does it, too.

"I just happened to think about this experience I had with chattering rolls. I was out West, and had trouble with uneven yarn. They had had two or three men before me. They had overseers, who were really my second hands, and I said to one of them after a week or two 'Why did the last man leave here?', and he said, 'he didn't like the town', and I said, 'if this work doesn't get to running better, here's another fellow who is not going to like the town.' I sent some of the roving to my father back in Maine, and he took it up to the Edwards Manufacturing Company, and wrote me back that it was poor lubrication in the carding. I said, 'Well, the old man I thought used to be a good carder, but he has forgotten all about it.' Anyhow, he told me to get some spern oil and so I thought I would try it. We had solid front rolls on all of our fly frames, and I put that sperm oil on them and it wiped out that trouble right away and the yarn was a great deal more even. It was nothing but just lubrication. It impressed me especially because it held my job. I think that poor lubrication and the mixing of the stock has as much to do with uneven work as any two other things."

"There is one thing that hasn't been mentioned which I had trouble with a good many years ago," added Robert K. Eaton, professor in carding and spinning at Clemson College, S. C., "and that is the use of poor roller felt. When we used this we had vibration so that the kinks would come through, and with a hard-twisted roving, the rolls would be scored if the felt under the cots was not elastic enough to give back. The scored places might not be for the full circumference of the roll, but would make a short indentation, and as the traverse brought the roving to that place, uneven yarn usually resulted."

Referring back at this point to the suggestion of Mr Jones to use a different grade of steel in re-necking rolls, Mr. Wikle stated that he had found that Calumet steel, made by the Crucible Steel Company, made mighty good necks. However, he added, this material is very hard to handle and will cause complaints from those doing the re-necking work.

F. D. Lockman

Slack Bands.

"Now," said Mr. Harris, "we have heard a number of things that will cause uneven yarn. What are some of the remedies? We had slack bands suggested as an example. Where we are so unfortunate as to have to run bands, what kind of system do we have for overcoming the problem of loose bands making bad yarn?"

"We usually go over the bands every Tuesday, and if a band is loose we cut it off and put on a new one," advised Mr. Wikle.

"I tie them on as they come off. That is my system," said John S. Lockman.

"But I know a good many mills use some form of inspection for catching the bands before they come off," suggested the chairman.

"I have tried that," answered Mr. Lockman, "but if you can get a band that is of the right weight and right size and made out of the right kind of stuff, you are not going

to have many slack bands. When it gets that way it is done; it will not run enough to make any slack yarn."

"We have no system of checking up," responded Mr. Waldrop to a question from the chair, "but we do require the doffers, when they find a soft bobbin, to flag that end, and the section man looks after it. Probably it is not a band; it might be a stuck bobbin."

"By the way—stuck bobbins," said the chairman, "that is one cause of uneven yarn which I don't think was mentioned a while ago."

"I want to say one thing in regard to soft yarn," requested John S. Lockman. "I had an experience a good many years ago that I have never seen anything like since. I was at a mill in Georgia some 25 years ago, and in those days, you know, the doffers had to have a board to knock the bobbins down with when they doffed. I began to have trouble with soft yarn in the spooler room. We would have sometimes a piece of yarn a foot or so long that was soft and then on each end was good hard yarn; maybe just a piece of soft yarn a few inches long. A lot of it would break down on the spooler. I guess we went through our spinning room nearly every week to check up on slack bands, so I could not see how that could be making it soft that way. I went to the spooler room and watched it run out, and I found it was coming right off of the bobbin when the frame was doffed. I was a second hand then, and it was up to me to find out what the trouble was. The overseer said it was slack bands. I went back to the spinning room, and found that the trouble was this: in knocking down the bobbins with their boards, the doffers sometimes would knock them 'out of set' some way or another and they would wabble and shake at the top. It would do this for a while and when the spinner saw it she would come and touch the end of the bobbin and it would straighten up again. All the yarn made until the spinner touched the top of the bobbin would be soft. I was glad to find this, because the overseer was swearing by all that was good that it was slack bands."

J. S. Lockman

"What did you do to stop it?" asked L. E. Wofford.

"Stopped 'em from knocking the bobbins," answered Mr. Lockman.

The chairman next asked W. W. Becknell, superintendent, Arkwright Mills, Spartanburg, S, C., what he did to overcome uneven yarn.

"Well," replied Mr. Becknell, "what we did to overcome it took a lot of work, but I think it was well worth the effort. We took out every spindle and blew out the base, and re-adjusted the steps and bolsters and put them back in, and went over every frame, and when we got through we decided that our old stirrups were too old, so we put on the latest type saddles and stirrups and lever screws and levers, and all of that has helped us more than anything else we have done. I notice a considerable difference now; in walking down in front of the warpers it doesn't look like the same yarn."

"I think the most important point is the stock in the card room, or the unevenness in the carding," declared J. H. Huff, superintendent, Camperdown Mills, Greenville, S. C.

How is Cockled Yarn Made?

Here the meeting turned into an interesting discussion on the subject of "cockled" yarn. At a meeting of the research committee of The Arkwrights, Inc., on the night previous, it was announced by David Clark, there was quite a lively argument as to just where "cockled" yarn was made, and Mr. Clark suggested that this might be a timely subject for the spinners present to take up.

"I believe cockled yarn is made between the front roll and the middle roll," responded Mr. Huff. "The front roll catches the roving before the middle roll turns it loose. I know the worst experience I ever had was trying to run mixed staple."

W. T. Morton

"At the meeting last night, one man said if you take cockled yarn and pull it out, you would have perfect yarn," added Mr. Clark.

"I think if you will take a piece of cockled yarn and pull it gently, you can break the long fibers, and I think that the long fiber in coming through makes pretty close to a corkscrew. The long fiber is held and the shorter fibers are wound around it. You will have a good piece of yarn if you smooth out a piece of cockled yarn, but there is not as much twist where it is cockled." This statement was from Mr. Jones.

"I am of the same opinion as Mr. Huff," said Mr. Morton. "You will not have a perfect piece of yarn. There is no twist in it. It is soft. I have always been of the opinion that the front steel roll catches it before the middle roll turns it loose. The only remedy is to open the rolls sufficiently for the long fibers."

A. B. Carter suggested that the men outline their method of stopping cockled yarn.

"Sometimes, if the back saddle is turned around, it will throw the top roll up closer; and if the steel stirrup is rubbing on the front steel rool it will push the top roll backwards," said J. R. Wikle.

"I was in that discussion last night," declared Mr. Dilling. "We all agreed that cockled yarn comes from longer fibers than the rolls are set to take, but the question was whether this cockled yarn was formed *between* the middle and front rolls, or *in front of* the front roll. My contention was that when you have a fiber longer than the others, that fiber will stick out at the bite of the roll and the front roll will draw the other fibers down on it and twist them around it and twist it all up into a lump."

"My experience with cockled yarn is this," said John S. Lockman. "It must be a long and a short fiber together, and it is impossible for it to get its twist before it goes through the front roll, and I believe that the long fiber from the middle to the front roll is held by the middle roll after the front roll gets hold of it, and it puts its twist in right just after it goes through the front roll, because no twist comes into the yarn until it goes through, and this fiber goes through just enough to twist up and make a thin place. It is bound to take this twist right at the bite in front of the roll where it is delivered. When you spread the middle roll you are getting it back to where it doesn't hold it. The longer the fibers are the bigger the cockle will be."

"I agree with Mr. Dilling's idea as to where the yarn is cockled," said Mr. Huff.

"That being the case," asked P. W. Ellis, assistant superintendent, Anderson Cotton Mills, Anderson, S. C., "if a cockle comes in front of the steel roll why wouldn't it break the end by taking excessive twist or cause a light place by the excessive twist?"

"It's the extra staple in the long fiber," said Mr. Lockman.

Frank D. Lockman said, "I want to tell you that in my spinning room, on warp frames, a lot of times after stopping time on Saturdays—we run day and night so that is the only time they stop—I find a little cockled place right up next to the steel roll, with the frame stopped. Then on Monday morning we do not have cockled yarn. Sometimes I find 50 to 100 ends cockled up next to the steel roll, but when we start up we do not have cockled yarn."

W. A. Black

"That is caused from the traveler stopping and a little kink coming there," explained Mr. Morton.

Here Mr. Harris raised the point whether a heavily-weighted frame would make more or less cockled yarn than a light-weighted frame. Mr. Jones answered by saying that "We have two plants, one of which is on single roving and one on double roving, and in the mill on single roving, in nine years, I have never seen a piece of cockled yarn. I do not know whether it is the single roving or the weighting of the rolls; the weighting is heavier. But it is a peculiar fact that we never have a piece of cockled yarn in that plant." Mr. Bagwell brought out that fine yarn is more susceptible to cockling than is coarse yarn, due to the staple.

W. A. Black, superintendent, Beaumont Mfg. Co., Spartanburg, S. C., was asked for a comment. "There is nothing I can add," he said. "I used to staple all of the cotton at our place when the plant was small, and I have before now run onto a bale of staple that was longer than we ran, and I have let it slip by just to see what effect it would have and then I would listen, and our spinner, being sensitive, would squall. And then I would watch the spinning frame making cockled yarn, and from my observation, gentlemen, I contend that the cockle is made right at the front of the roll, but the cause is between the middle and front rolls in that the front roll bites the stock before the middle roll lets it loose, and something must slip, and naturally the short fibers, when turned loose by the middle roll, with the long fibers in contact, and the front roll making its usual revolutions, is the stock that slips."

Stanley A. Black, night superintendent, Lancaster Cotton Mills, Lancaster, S. C., presented the theory that "if the supply of roving as it is delivered is even, and the front rolls take a certain amount of roving all of the time, and the back roll holds the long fibers, it will have a tendency to slide that roving. And then we all know that the twist runs to the thin places in any yarn, and when that takes place when it leaves the front roll it will have a tendency to take the twist. I figure that the back roll has a better grip on the roving, and that cockled yarn is simply a bunch of twist caused by the front roll slipping."

Professor Eaton said that his explanation of cockled yarn to his classes at Clemson is that it is on the same principle as an automobile wheel slipping in the mud. The long fiber is held by both rolls, and then the short fibers are caught by the front roll and thrown out on exactly the same principle as the rear wheels of an automobile throwing out mud, and the twist runs into the long fiber and the short fibers have compartively no twist. When the yarn is broken the long staple is severed and a place with no twist in it is found.

"In the past few years we have tried to get away from some of these things by the long-draft spinning," said Mr. Dilling. "This change has been brought about by a light unweighted middle roll and other means such as cots or tapes or something else of that nature, that hold it but do not hold it so tightly but what the front roll will pull it out. If there is anybody here who has used the Casablancas or some other long-draft system, I would like to hear from them as to whether they have cockled yarn or not. If not I think that is pretty good evidence that it is caused by the long cotton being held so firmly by two rolls that it has to slip. Some people have put in the light middle roller, weighing from two to three ounces. It is so light that it will not hold the fibers firmly. I have a friend who is running 1 5/8-inch cotton, and uses the 2½-ounce middle roll, and the rolls are set to practically an inch from center to center, and he claims to me that he does not have cockled yarn. It is caused by the light roll being so light that it barely holds the roving."

Reverting to his own statement, Mr. Jones raised the question as to how many men present used single roving, and whether in these cases cockled yarn was experienced. Approximately a dozen men said they use double roving, but no one added that he is bothered with cockled yarn.

In connection with Mr. Dilling's inquiry on long-draft spinning, A. L. Ellis of Pelzer said that "We have some of the Casablancas on warp and some on filling. I would not say that we have cockled yarn like we do on the old system, but we do have a lumpy yarn, which, I think, is caused by too much twist in the roving and too much humidity in the room." He said he believed it was due to a large extent to excessive humidity.

Stanley A. Black

This question was continued by Mr. Bagwell, who asked, "why is it that you can be running along nice and smooth with no cockled yarn, and then have the atmospheric conditions change and have cockled yarn?"

"I have had a good deal of experience in running 50s regular twist voile and the same number in a crepe twist, which is a harder twist," said Mr. Waldrop. "In changing from the regular to the crepe twist, using the same hank roving, I find I can close my rolls up on the crepe twist and not get any cockled yarn, but if I tried to run the regular twist with the same setting I will have cockled yarn. I also run a lighter traveler, but the yarn weighs the same, and I can run it with a closer roll setting with a lighter traveler, but I open up the rolls when I change to the regular warp twist."

"I think Mr. Ellis' explanation of his lumpy yarn would very well answer Mr. Bagwell's question," declared Mr. McNeill. "My observation has been that we have more cockled yarn in damp weather. Cotton that possibly would

not cockle today, it being dry, might give you trouble tomorrow due to excessive humidity."

"Well, isn't it a fact that the fiber of cotton will not be as long when it is dry?" inquired the chairman.

"I believe you are right in what you say about that," said Mr. Morton. "When it is dry the cotton will curl up. You can moisten it and it will straighten out."

"I do not think it is really longer," said another man, "but it is just naturally harder to run then than when it is dry. You can have too much humidity in the card room and the spinning will not draw the roving. If you have an uneven roving from your speeders, the twist will run to the smallest places, and it is harder to draw with the thin places than where it is uniform."

"The question of cotton showing long under moist conditions is right," said P. W. Ellis. "It will show slightly long. If you send cotton to an arbitration board it is subjected to a certain humidity condition for so many hours before the board passes on the cotton. It doesn't make it any longer, but it just brings the true staple out."

"I didn't mean that it made it any longer," explained Mr. Harris, "but you can pull it out stronger."

Called upon for his opinion on cockled yarn, W. S Moore declared that to his mind the best remedy is to fight the proposition in the opener room.

Variation in Staple Length.

The discussion turned from cockled yarn at this point into a consideration of the variation occuring in the length of staple in the same bale, since this has a direct effect upon the producing of cockled yarn. Some figures from the test of O. G. Murphy, of Shawmut, Ala., for The Arkwrights, Inc., were read. This test was to show the difference in staple length occuring in bales of cotton from different states. All bales were bought as one-inch staple.

Since F. Gordon Cobb, executive secretary of the Southern Textile Association, and president of The Arkwrights, Inc., under whose auspices the test was conducted, has indicated a desire that mention of the states from which the cotton tested was secured be omitted, and since the logic of his thought that comparisons obtained in limited tests between the cotton grown in different states cannot be other than injurious in its effect is admitted, the names of the states will not be given in this report.

J. H. Nichols

According to the fibers, in a test from three bales of supposedly one-inch staple cotton, one state showed 21 per cent above one-inch, and 31 per cent to be one-inch. Another state's figures were 17 per cent above; 30 per cent one-inch. A third showed 21 per cent above; 33 per cent one-inch. A third showed 21 per cent above; 33 per cent one-inch. Another 22 per cent above; 33 per cent one-inch. A fifth state showed 23 per cent above one-inch; and 39 per cent one-inch. The last cotton involved in the test showed only 15 per cent to be one-inch, with none above an inch, with nine per cent of the cotton below 3/4-inch in length of staple.

Reading the figures on the bale, Mr. Dilling said this showed 18 per cent better than one-inch; less than 27 per cent one-inch; more than 23 per cent 15/16-inch; 12 per cent 7/8-inch; 10 per cent 3/4-inch and 5 per cent below 3/4-inch. "Some of it showed up as high as 10 per cent less than 3/4-inch," he added.

There was some discussion here between P. W. Ellis and Mr. Dilling and Mr. Clark in connection with these figures. Mr. Ellis brought out the fact that "cotton is grown and not manufactured." He declared that such specifications might be put into a contract, but that when a mill endeavored to go out and buy the cotton according to them it would be an entirely different story.

"I think the time is coming when you are going to buy cotton with the percentage of staple lengths specified," said Mr. Clark. "I think you will admit this is a good system. Mr. Murphy keeps a record of each lot of cotton that he buys, and if his test shows it to contain a varying lot of short staple in it, he has the name of the shipper and the place where it was bought, so that he doesn't have to go back there."

W. S. Moore

"The average way in stapling cotton is to throw away the longest fibers and staple it for the average," said Mr. Ellis. "You might find some 1 1/32-inch cotton in it, and yet it might classify as inch cotton."

Mr. Clark asked if the New Orleans Cotton Exchange arbitrated on that basis. Mr. Ellis said that he had not dealt with that exchange in several years on matters of this kind, but that all of the other points operated on that basis.

"Well, is Mr. Murphy right? What percentage do you find?", asked Mr. Dilling.

"That is a hard thing to answer," said Mr. Ellis, "because, as I said, cotton is grown and not manufactured. This year's cotton is much better body than last year's crop. We must buy our cotton at a price at which we can manufgacture goods and make money, and if you get so critical that the cotton shipper doesn't want your business you will have to pay a premium of 50 to 100 points over what he is asking the other fellow."

"But sometimes we manufactures must get the responsibility placed back where it belongs," declared Mr. Dilling. "If we have this cotton which shows up the worst in Mr. Murphy's report, and a competitor has that showing the best, we are up against it." He called attention to the fact that in some way, Mr. Murphy had set a "standard" of 18 per cent fiber above the one-inch specified. "I don't know where I could buy it on those specifications," said Mr. Ellis.

"But I think you will agree that Mr. Murphy has an advantage over nine-tenths of the rest of us," said Mr. Dilling.

"I'll say he does—if he gets it that way!", commented the chairman.

"Yes, if he gets it according to these specifications, and he gets it," said Mr. Darling. "I believe if we look into that more carefully, and get the cotton we demand instead of this cotton which shows up only 15 per cent as one-inch, we will bring enough pressure to bear so that the man who has got the good cotton will get a good price for it, and the man who has the poor cotton will have to bear the consequences."

"We have tried for the last three or four years to get the farmers in our section to plant good seed," said Mr. Ellis. "As late as 1920 the county I come from raised

70 per cent inch and better cotton. For the last three years I do not believe there has been ten per cent that would pull inch cotton, and some of us who are interested in manufacturing are trying to get the farmers to improve and get a seed that will give a good inch cotton. We have made some headway. Last year 20 per cent of the crop was planted from a Western seed that should produce 1 1/32-inch cotton. Next year the percentage will increase as this seed is being ginned and saved. But it is as I said, cotton is grown, and not manufactured. We must take what the Lord gives us. Somebody must spin the poorer cotton We do not want to do it. We do not have to do it. We can go west of the river to get it."

Here the chairman emphasized the point that it was not desired to leave the impression that all of the cotton from any one state was inferior to other states' crops. This bearing out the thought of Mr. Cobb as explained in a previous paragraph with reference to eliminating the references to states by name in giving these figures.

"I do not think there is a more important subject that we can discuss," said Mr. Dilling. "About ten years ago, there was a strong sentiment among the farmers to plant what was known as half-and-half cotton that was supposed to produce fifty per cent lint and 50 per cent seed, whereas they had been getting 33 per cent lint and 66 per cent seed. I think this cotton was some of the poorest cotton that has ever been raised. I bought cotton in a section where they had planted a large amount of it, but because we discouraged them they did not plant any the next year, and for the last few years I have heard nothing of this half-and-half. The same situation exists today, coming about from other causes, and if we can bring this pressure to bear and cause the farmers to select better seed and give attention to the cultivation, planting, etc., it will be better for the farmers and the manufacturers, and then it is up to us to adopt whatever means we can for avoiding this sorry cotton. There is no use paying the same price for it all. We will be doing the farmers a favor."

(EDITOR'S NOTE. Right at this point we wish to call attention to the cotton tests reported in the article by Horace H. Willis. This article will be found on page 621.)

This concluded the morning's practical discussion. The chairman announced that the final feature would be a talk by Philip C. Wentworth, treasurer, National Ring Traveler Company, Providence, R. I., on the subject of ring travelers. Mr. Wentworth's paper will be found upon another page of this issue.

Following Mr. Wentworth, Professor Eaton outlined the testing facilities at Clemson College, and invited the mills to submit any questions or samples for testing. The school he said, is well equipped to do this work, and the authorities are glad to do it without charge to the mill.

The Luncheon.

At the conclusion of the morning session, the ladies' organization of the church served an enjoyable luncheon, some 147 members being present. After the luncheon, the practical discussion was resumed.

The first feature brought up was suggested by George W. Ray, overseer spinning, Pelzer Mfg. Co., Pelzer, S. C., who wanted to know what was the proper construction of a spinning band. Mr. Lockman said that he uses seven strands of 3.12-hank roving, making between 98 and 100 bands to the pound. He said he believed 7 strands better than 5 or 6 strands, and that "with the proper twist in the roving, and putting all the twist you can in the banding, you will get good results."

Construction of Spinning Bands.

Peter Quinn said that "the standard weight for bands is 120 to the pound, made out of 3-hank roving, with 7½ turns per inch of twist in the roving. What gives out is the loop, and if you do not have enough twist in the loop the bands will not last. Seven strands should be used." Mr. Ray here indicated that he runs 25s and 30s warp and 30s, 40s and 42s filling, 15/16-inch whirl, 8,000 r.p.m. spindle speed.

"If I didn't run anything but 30s and 40s I would not have anything but the 120 bands to the pound," said Mr. Lockman, "but I run from 15s to 40s, and I try to make a band that will serve the purpose for all of them." Mr. Quinn said he would recommend that weight for anything on the spinning. "With the larger bands," he said, "you have more slippage and they wear out quicker. The 120 bands to the pound weight will average 11 months running."

Mr. Harris asked for records as to the life of bands Mr. Lockman answered that he has 57,000 spindles on a day run and about 40,000 running at night, and that he uses anywhere from 25,000 to 30,000 bands a month for these spindles.

The chairman brought up here the point that formerly the bands were made of yarn, and asked for discussion as to the comparative advantage of bands made from roving. No one discussed this, and the chairman said that apparently the introduction of the automatic banding machine had been largely responsible for it.

"The bands seem to break mostly at the loop," said Mr. Morton, explaining that he had found the hook at that point on occasion to be flattened out, which prevent the twist from going into the loop, and that by rounding off the hook he had overcome this excessive breakage.. He said that he has 40,000 spindles, band driven, on 30s, 40s and 42s, and has four frames banded every day.

Mr. Wofford asked whether the bands were made out of 7/8-inch cotton, and Mr. Ray said his mill uses 1-inch cotton. Mr. Wofford brought out that the practice of allowing the band boys to stand in the windows and ravel the bands before putting them on will tend to increase the band consumption. "We use 11 strands, 7 turns to the inch, 3.50-hank roving, and our bands weigh about 100 to the pound," he said.

Here the chairman asked for the average weight of the bands, and they ranged between 92 to 120. "The trouble with the 120 band is in the boy tying them too tight," defended Mr. Quinn. "If you had one of these tension devices that 120 pound band would last much longer and give you better results."

"Yes," observed the chairman, "we would all like to have one of those tension devices if they didn't want to charge so much for them."

Amount of Spinning Waste.

The next question Mr. Harris announced had been handed him during the day. It was, "In a mill making 30s yarn out of 15/16-inch staple, double roving, what would be a reasonable allowance of waste, per 1,000 spindles—roving waste, bobbin waste, lap waste, spinners waste, etc?"

John S. Lockman offered to mail the chairman his figures on this, not having them with him at the time.

In answer to this question, Mr. Dilling read some figures from the test of George F. Brietz, for The Arkwrights, Inc., made carding 16, 12 and 8 pounds per hour per card. When carding 16 pounds to the hour, making 26s yarn, the waste per spindle in the spinning room was 8.67 grains. Carding 12 pounds per hour gave 6.80 grains, and carding 8 pounds per hour gave 4.15 grains.

Mr. Dilling also gave the figures on ends down per thousand spindles per hour. Carding 16 pounds, the average was 60; 12 pounds, 59; and 8 pounds, 24. As to breaking strength comparisons on the 26s yarn, carding 16 pounds per hour gave 60 pounds; carding 12 pounds brought it up to 69 pounds; while 8 pounds per hour carding gave a yarn breaking strength of 70.43 pounds.

Travelers on No. 2 Flange Ring.

"On a No. 2 flange ring, is it an advantage to use anything smaller than an A-1 circle traveler?", was the next question, asked by Mr. Morton of Newberry, which started the discussion into the realm of travelers.

"I would say no," observed the chairman.

"I tried 5/16 but I couldn't see any results," said John S. Lockman.

Mr. Britton was called upon. "I cannot say whether it would be impracticable under those conditions," he responded, "but I can give you a rule that I use, so that you can tell when you have a traveler that is too small. If your circle is large enuugh, when you pull the end up it will run around perfectly free, while if it is too small, you will have a pull on the yarn just the same as when you go fishing and get a bite on the line."

The opinion of Mr. Quinn was requested. "On a new No. 2 flange ring," he said, "you would have a job running an A-1 circle traveler. If the ring is old the flange is worn and you can do it. But on the No. 1 flange ring you can use still a smaller circle than that. When the No. 2 wears down, it becomes about a No. 1½ instead of a No. 2, and then you can get better results with an A-1 circle. The larger the circle is, the more it tips over, and the smaller the circle the more friction it has on there."

"You are governed by the size of the yarn," explained Mr. Britton. "As a matter of fact, Mr. Crow over there at Drayton on fine numbers uses a 3/4 circle. It is the size of the yarn coming through the traveler that controls."

"I use an A-1 on a No. 2 flange ring, on 30s warp, and find it very satisfactory," said Mr. Ellis. "This is a new ring.' '

"Did you try less?", inquired the chairman.

"No," answered Mr. Ellis. "I do not remember having tried less; certainly I never adopted it and never shall."

On 40s filling, said Mr. Lockman, with new rings, he uses the A-1 on No. 2 flange with good results.

Professor Eaton here raised the point whether the men using certain circle travelers really knew that they were doing so by gauging them to a standard.

"I have a traveler gauge, but a traveler man tried to get it away from me," said Mr. Morton.

"That's just the point I wanted to bring out," declared Mr. Eaton.

"This fellow said the one I had wasn't correct, and to let him have it and he would send me one!" said Mr. Morton.

"A traveler man told me that so many spinners didn't know what they have after they gauge them, until they thought it best not to let them have the gauges," said Mr. Lockman, who asked the next question, as follows:

Keeping the Balloon Down.

"Is it more practical to keep the balloon out of the yarn with a heavier traveler, or by some other means?"

Mr. Quinn brought out in answer that the idea is to run as heavy a traveler as possible without stretching the yarn. "If you run it too heavy," he said, "you will make the work run bad. The square point will hold the balloon better than the round point."

"On any number?", asked Mr. Dilling.

"Yes," said Mr. Quinn, "but of course there are some you cannot run a square point on, but you have a wide frame and are not bothered with the ballooning."

Mr. Harris asked Mr. Lockman if he had any of the "other means" for doing this he had referred to.

"I don't like a heavy traveler," Mr. Lockman replied. "I think the heavier the traveler the more wear you will have on your ring and yarn. I find there are other ways to get the balloon out of the yarn and run a lighter traveler. You can take it out with your thread board and your guide, and you can use a wire between the spindles. I am running between three and four numbers lighter traveler than the fellow before me ran, and I am getting a good deal more yarn on the quill, and it is on there tight enough to weave off all right. I like to run the traveler as light as possible. The closer you get the guide board to the end of the spindle it takes out the balloon, and I put a piece of wire on the back of the rail to separate the ends. It goes up within just about 3/4-inch of the yarn, and it holds the balloon and makes it center over the bobbin. This is on filling."

"Do you have any singlings on double roving by using the light traveler?" Mr. Waldrop asked.

"No, sir," replied Mr. Lockman. He explained in answer to further questioning, that the wire goes up about 2¾ inches from the rail, and is about one inch from the back part of the rail. He said he has no trouble in getting the stuff down on top of the quill; that he could run it over if it wasn't for the boss weaver.

Life of Rings and Travelers.

"Which traveler wears out the ring quicker—the light fine traveler, or the heavy traveler?", asked Mr. Bagwell.

"The light, fine traveler will do it quicker," said Mr. Quinn. "A round point traveler will wear it out quicker than a square point. A round point will cut right through the case-hardened part, whereas a square point has so much friction that it cannot go through."

"I see that it would take a bigger piece of metal longer to cut through anything provided you had the same amount of friction, but if you take the weight off and it is just going around the ring and not pulling against it, I cannot see where it would cut a groove quicker than the larger traveler would," said Mr. Lockman.

Mr. Quinn explained that 66 2/3 per cent of the friction is removed in the round point traveler.

"We run some 36s and some 45s," said J. H. Nichols, overseer of spinning at the Monarch Mills, "and I noticed that we replaced the rings earlier on the 45s than on the 36s. We run 12/0 travelers on the 36s and 16/0 travelers on the 45s. We found out that our rings wore out quicker on the 45s than on the 36s, at the same spindle speed.

"In speaking of travelers, we run a 3/4 circle. We did

run an A-1, and ran it for several years, but we had a lot of trouble. We thought our spinning wasn't running as good as it should, so we had a traveler man come down and look things over. We tried out some of the 3/4 circle and we got better results, and we now run 78,000 spindles on the 3/4, with a No. 2 flange ring. When we changed to the 3/4 circle we had old rings, and since then we have put in new rings and are still using the 3/4 circle."

"How many use the square point and round point?", asked Mr. McNeill, and it developed that 15 present indicated the use of the square point.

"If you want some trouble, go from the round point to the square point," observed Mr. Lockman.

"I use the square point on filling, and the round point on warp," said Mr. Ray. Following this stateemnt, it developed that 15 of those using square point use them on warp.

"How often should travelers be changed on 30s warp?", asked Mr. McNeill. The replies varied from three to four weeks.

"I would like to have someone explain what would be the trouble in changing from the round point to the square point," requested Mr. Ray.

"Well," responded John S. Lockman, "the round point having a round sharp point on it something like a needle, makes a very small groove in the ring where it wears, and when you put in the square point it has quite a wider point and it cannot fill up this little groove made by the round point; part of it is in it and part of it is out of it. It has to wear a new route on there."

After a couple of amusing incidents being related by Mr. Morton and Mr. Lockman, the traveler discussion was concluded. Mr. Dilling, however, brought out the fact that William P. Dutemple, southern representative of the Whitinsville Spinning Ring Company, has a Rotostat, which slows down the speed of a rotating or revolving object, on the principle of the slow-motion movie, and Mr. Dilling suggested that it would be very interesting to observe the action of a traveler in operation through this device.

Systems of Cleaning Frames.

Mr. Dilling next turned the discussion into the consideration of methods and systems of cleaning. He started it by stating that in his opinion, the average method of cleaning involves picking clearers too often for good results. He said he lets his run about six hours, on 60s and 80s, before picking.

"I didn't know that anybody ever had the same idea on that that I have," said Mr. Lockman. "I don't think that slats ought to be picked until they have accumulated quite a bit on them, because there are certain portions of the roll that part of the flannel never touches, and if you accumulate a certain amount of waste it will take that up. I have my slats picked twice a day on 30s and 40s. I wipe roving every other day, top beams once a week, run out guides I try to keep clean. I pick rolls every day, the front rolls."

"We pick ours every six hours," said Mr. Smith. "Rolls, back and front, twice a day; guides, four times a day; run out guides, every hour."

"We are running night and day on 30s and 40s," reported Stanley W. Converse, assistant superintendent, Clifton Manufacturing Co., Clifton, S. C. "We pick the rolls once a day and once a night, and keep the guides wiped out. The slats we pick twice a day."

"We use clean-up hands and leave all of the cleaning to them," said Stanley A. Black when called upon.

J. J. Lever of the Pacific Mills said that on 30s warp and 40s filling, his spinners run 18 sides, 264 spindles to the frame. He said he uses clean-up hands who handle 40 sides of filling and 20 to 30 sides of warp.

"We run 25s and 30s warp and 30s to 45s filling, and our warp spinners on 25s run 26 sides, on 30s 28 and 30 sides; on filling they run 24 sides. Our clean-up hands clean 34 sides. We pick the clearers three times a day, rolls once a week, front rolls twice a week, roving twice a week." This statement was from Mr. Ray.

"Do the doffers do any cleaning?", asked John S. Lockman.

Mr. Ray said, "No," and Mr. Lever explained that his doffers clean only the heads. His slats, he added, are cleaned twice a day.

"Since the doffing question has come up," suggested Mr. Ray, "we figure on changing and having them clean up. Is it better to do doffing in sets of doffers, or is it better to have the doffers work alone?"

Methods of Doffing.

"We have two doffers to the section of 48 frames, and one end-piecer," said Mr. Lever. "This gives us two frames stopped on filling and one on warp. The doffers clean the rockers once a day and the heads twice a week We do not use the ordinary rail broom. We made a brush by taking a piece of broom handle about 16 inches long and using hard waste, leaving about four inches for the handle, and that is held up against the rail. We used to spend $18.00 to $25.00 a month for these brooms, but they do not cost us anything now."

"You do not wipe the spindle rail and the ring rail at the same time?" suggested Mr. Harris.

"No spindles twice a week," replied Mr. Lever. "We have two doffers and an end-piecer to each section man."

"I have doffed singly, and in groups, and I like the group method the best," reported John S. Lockman. "I have four doffers to the set, on some filling, and an end-piecer and a head doffer. I prefer the group doffing any time to any other way."

About five years ago, said Mr. Harris, "we sent out a questionnaire and at that time a majority of the men were using four doffers to the set, but since that time this has been decreased down to two in a number of cases, and a large number are using only one to the frame."

Mr. Lever explained that he uses his method in order to keep two section men from handling the same doffer.

Mr. Lockman repeated that in his opinion "the best method is four doffers to the set where they piece up their own ends, but the time came when you couldn't get doffers to do that. A doffer can't learn to piece up an end in a week or two, and I remember just a few years ago due to a scarcity of doffers, we had to bring farmers from between the plow-handles and put them to doffing, and we had to have somebody to piece up for them. You can't always pick up a doffer who can piece up. So many mills have started using end-piecers that everybody has to do it now."

Mr. Nichols said he uses two doffers to the frame. With this system, he pointed out, he doesn't have but one frame stopped at a time. Further, he said, using four doffers to the frame it is necesary to have a head doffer with them

to keep them straightened out, while the section man can do this where two are used to the frame.

"I use my doffers by themselves entirely," said Mr. Smith, "because all my doffers are grown men, and they doff 7 to 24 frames, depending on the number of yarn."

"We changed from group doffing to one doffer to a side," said T. C. Drew, Jr., night superintendent, Clifton Mfg. Co., Clifton, S. C., explaining that they had run into considerable trouble with the end-piecers kicking about the doffers tearing down ends, and under the group system, it was very difficult to fix the responsibility, so, he said, they put a doffer on each side and he does his own piecing.

Paying for Doffing by the Hank.

"Seven years ago we had four doffers to the side, and we changed it to one doffer to the frame, and pay them by the hank clock," said L. E. Wofford. "I was opposed to it then, but now I don't believe you could get me to change back. It stops the frames a little longer, but you eliminate other troubles. We are running better today than we ever did before with the group doffing. The frame is pieced up before the next one is started. They are learning to doff faster; they are getting paid by the production."

George H. Hughes, superintendent, Borden Mills, Inc., Kingsport, Tenn., was asked to describe his method. "I have not been here in the South very long, about 1½ years. I have my doffers paid by the hank, and in addition the section men and spinners are paid by the hank, and I believe we have started up our mill much easier than would have been the case by paying them by the hour, or day, or side. We are very well satisfied and our help changes very little."

C. W. Cain, superintendent, Excelsior Mills, Union, S. C., also reported the practice of paying doffers by the hank, stating that it is extremely satisfactory, and that no difficulty was experienced in changing from the former method of payment.

Mr. Lockman brought up the question of establishing the rate in changing to the hank system of payment. Mr. Hughes explained that they figured the 100 per cent production of the frame, and based the prices on that, and then if the spinner got 101 per cent by running through the noon hour a little, it was that much gained. "We find we have gone above 100 per cent on both warp and filling," he said. "We are running piece work wherever we can, drawing, speeders, spinning, doffing, section men, looms on pick counters."

Mr. Lockman asked what arrangement was made when a frame broke down. Mr. Hughes said this was figured out, and that 75 per cent of the amount run on the opposite frame was allowed in the case of a break-down.

There was some further brief discussion, following which the meeting was adjourned.

New Principles in Making Ring Travelers

By PHILIP C. WENTWORTH.

Ring spinning will have its one hundredth anniversary in 1928, because the traveler was invented in that year by John Thorpe of Providence, R. I. With Thorpe's revolutionary invention began the passing of the Throstle Frame, and was to eventually supercede the mule in all but very fine numbers. It would be possible to dwell at length upon the ring frame as a whole, to describe the old masters who devoted most of their lives to perfect this now indispensable process of cotton manufacture, but the purpose of this short paper is to treat especially with ring travelers.

It is a recognized fact that the traveler is the instrument which measures spinning limitations, i.e. the endurance of the spindle, the ring and other essentials is far greater than the endurance of the traveler because they are much larger in mass and do not perform under so great a strain. In addition to the responsibility of twisting and guiding the yarn on the bobbin, the traveler is forced to withstand the hostile attacks of two invading elements, friction and centrifugal force. Friction, being a penetrating heat, inflicts its vengeance upon the steel structure of the traveler at the bearing point on the ring, while the centrifugal force is the agent which leads particles of lint, loosened by the friction slyly under the bow of the traveler to lodge in the vacuum and destroy the accuracy of weight, greatly multiplying air resistence and also affecting the weight of yarn in relative proportion. In addition, loading is one of the chief causes of thick and thin places. In view of these well known facts, the only way to more intensify spinning is to increase the stability of the traveler by a more scientific process of heat treating. Inasmuch as the traveler in regular style has a uniform amount of material from horn to horn, and must be in temper in order to be applied to the ring, it is drawn to a tempered condition throughout. A way to change the heat treating condition has been brought about by removing some of the material at the bow; not an easy task to perform mechanically. However, it has been successfully accomplished.

When tempering a traveler in this new form the heat acts more quickly at the point of removal and the temper flows to the vital point, top of the bow, for the same reason that twist runs to a thin place in the yarn. The sleel structure at the bearing point, or horn, is left materially harder than a spring temper condition. This hard steel structure at the horn results is greatly enhancing the stability and endurance of the traveler.

It has long been recognized that the ring traveler in its regular shape is an instrument very much out of balance, in that an opening is left between the horns called the "flange", and the traveler itself is not a true circle. The result is a top heavy affair with the center of gravity well above the geometrical center. We believe that this is one of the reasons for the unevenness of wear on the spinning ring, also, one of the chief causes of rings wearing "wavy." These defects of the traveler have received more recognition in England and Germany than in the United States, the home of ring spinning and the greatest ring spinners in the world. Attempts to overcome this unbalanced condition have been made by engineers in the above mentioned countries, by folding over the horns. These attempts to lower the center of gravity have not proved beneficial for the reason that it has required a greater length of material to make any given weight of traveler, and as traveler weights are constant, this has resulted in the use of a smaller gauge wire which has rendered the traveler weaker and less

*Extracts from a paper read before the Spinning Section of the Southern Textile Association at Union, S. C.

stable. Therefore, ideas of this character have never come into common use or progressed beyond the experimental stage.

The removal of material at the bow of the traveler has not only completely revolutionized the heat treating condition but the center of gravity has unquestionably been lowered to a point nearer the geometrical center. This important point was not realized until the Rotostat was brought into use for research purposes.

The Rotostat is a machine which can be placed in front of a spindle in operation, and its speed so synchronized that the spindle and the traveler have the appearance of standing still. Now, it is possible to observe in minute detail exactly what is happening; clear understanding takes the place of conjecture. By the use of this machine it was discovered that the traveler in its new form was practically "floating" with the ring simply acting as a guide resulting in a minimum of friction. Perhaps it might be well to add at this point that the basic theory of the ring and traveler, was for the traveler to "float", and the ring to guide same with only a slight bearing and the pull on the yarn was to be entirely governed and controlled by the weight of the traveler itself, consequently, the insistance on accuracy of weights.

The gradual advance and intensification of spinning, the coming of finer sizes and smaller circles, has caused the traveler to "ride" the ring flange thus upsetting the basic theory. The changes in traveler construction which have herewith been described are enlisting the deep interest of manufacturers and textile engineers. This interest has been manifested because of the fact, that figuratively speaking, the ring traveler has been in the dusty closet of neglect for nearly sixty years. This statement is being made not unmindful of the manufacturing refinements which have been brought about in order to keep pace with the development of the art of ring spinning, but rather, to focus attention on the lack of research and the development of advanced ideas and new principles.

In carefully reading the stenographic reports of discussions at spinners conventions, it has been noted that details such as weights, flanges and circles, have been concentrated upon with the consequent ignoring of much more important subjects. It cannot be too emphatically pointed out that such elements as are mentioned herein are absolutely under manufacturing control, and in order to meet almost every conceivable condition there has been built up a range of styles and sizes in ring travelers to a number in excess of ten thousand. Therefore, it is respectfully suggested that the practical manufacturer and the spinner can spend some profitable time in giving attention to some of the fundamental aspects of travelers.

In the past ten or fifteen years there has been tremendous progress made in the science of metallurgy. Wonderful new irons and steels have been developed to meet modern and exacting conditions. A certain amount of investigational work has proven that some of this advance in metallurgical science can be applied to the manufacture of ring travelers. One result is a new base material which is so superior in its inherent qualities that it is practically devoid of soft and hard places when drawn into a great multiciplicity of sizes of wire. The gratifying result of this is, that this new material, which is now called Relevart Metal, responds to the various manufacturing processes to a greater degree of accuracy, thereby giving a greater uniformity of weights. It also responds to the heat treating with a greater degree of uniformity, the result being that the travelers are stronger and tougher as well as a smoother and better finished product. For years one of the chief difficulties of the traveler manufacturer has been to obtain a material devoid of soft and hard places; a metal with such imperfections resulted in a wide discrepancy in weights, heat treating defects, etc.

A thorough investigation into the cause of the "loading" of a traveler has demonstrated that "loading" can be reduced and sometimes eliminated within the traveler itself. This is a feature of utmost importance because a "loaded" traveler is the main reason for a great many spinning troubles. While the change in heat treating and the resulting greater stability has discounted this important point, we still think that the antiloading feature is one of the vital importance and one that can be capitalized at a tremendous advantage.

Rumors of New Rayon Concern.

Bertrand R. Clarke who recently resigned from the Industrial Rayon Corporation and its subsidiaries, was elected president of that organization last June on the retirement of Walter W. Birge. At that time, the company needed the advice of a man of experience in the industry. During Mr. Clarke's regime the Industrial Rayon Corporation was able to vastly improve the quality of its product, reduce its costs of production and make trade contracts which have insured the future success of the Corporation. Mr. Clarke

Bertrand R. Clarke

was the active head of the Tubize Company during its early stages of development into one of the outstanding successes in the industry. In reorganizing the Industrial he seems to have had similar success and there are rumors in the trade that he will shortly head a large new company or be elected to the head of one of the present large concerns. His prominence in the industry and his knowledge of rayon insure his success.

W. L. SETZER is superintendent of the new Arcadia Mills, which have leased the Wilco Mills, at Ronda, N. C. He has been overseer of carding at Lenoir Cotton Mills.

Designing for Bedspreads

BY OSBERT HUGHES

Crinkle bedspreads were regarded on their first appearance as likely to possess only temporary popularity. However, they have proven their value and have become almost a staple bedcovering. This is owing to their low price, durability and easy laundering qualities, and also to the many attractive styles and patterns that have been manufactured. While their designing offers no new problems, there are many different types of fabrics being made, and this article is intended for the designer or mill about to start their manufacture or who may wish to engage in making more elaborate and fancy effects in place of the ordinary plain weave fabric.

The most common style is a fabric with a ground stripe of plain weave, one up and one down, alternating with stripes of crinkle weave. The crinkle effect is almost invariably plain weave, the ends forming the crinkle being placed upon a separate beam to that of the ground ends. The crinkle ends are usually three or four numbers heavier than the ground ends, although sometimes double ends of the same number are used. The top or crinkle beam is run under less tension than the bottom, thus allowing the ends to weave in faster and forming the crinkled effect desired. Crinkle motions for the loom have also been developed. It will be found that the crinkle beam should be about 30 per cent longer than the bottom beam in order to run both warps off at the same time, and all cloth calculations should be made with this in mind.

Crinkle bedspreads are sometimes woven 80 inches wide on wide looms, but are often woven on narrow looms and seamed in the middle. When the spread is to be seamed it is necessary to lay out the pattern to throw one-half of the repeat at one side of the cloth. Thus when it is seamed the pattern will run unbroken across the whole width of the

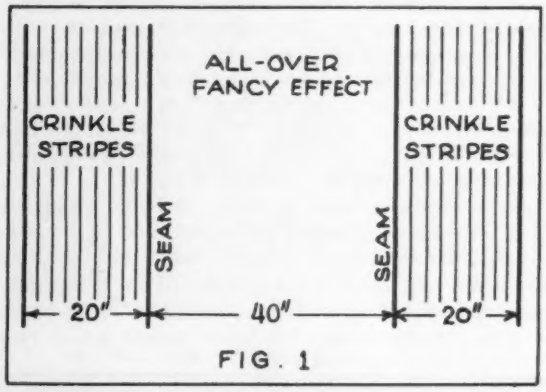


FIG. 1

spread. About ½ inch of plain weave is necessary for overlapping the seams. It is best to run plain weave or the ground effect on the other edge of the goods if the bedspread is to be scalloped. Bedspreads are usually made in two sizes, 80 x 90 inches and 80 x 108 inches.

A handsome crinkled bedspread may be made as shown in Fig. 1. It will be noted that the goods are woven on two looms, the crinkle on one and the center on another. This spread requires two seams, but instead of the seam running through the center it falls at the edge of the bed, where it is much less conspicuous.

It is possible to weave a seamless spread on a narrow loom by weaving double. A warp should be prepared

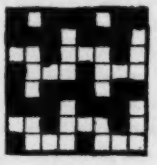


FIG. 2

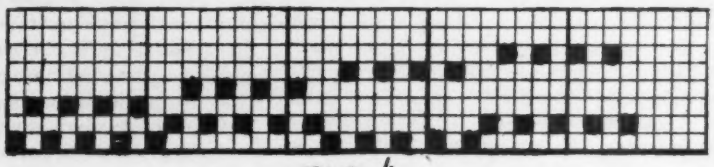


FIG. 4

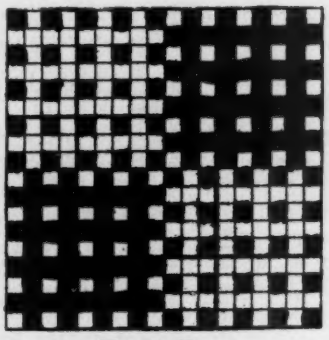


FIG. 3

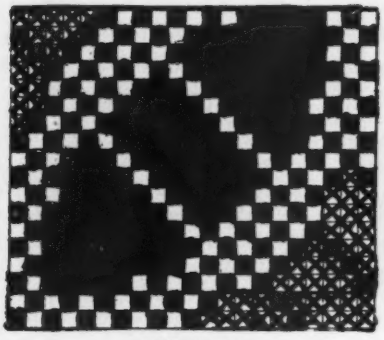


FIG. 6

using sufficient ends for a full width spread, and drawn in straight on 8-harnesses. The dobby chain needed to weave a plain weave spread is shown in Fig. 2. This will weave a double selvage at one edge, and a seam at the other. The seam edge should be planned to fall in a crinkled stripe, so that the fold, when the spread is opened out, will not be noticeable.

Many interesting effects may be developed by carefully planned striped warps. The colors chiefly used are rose, gold, blue, lavender, green and ecru. This gives a range of six colors for each pattern, which should be quite sufficient. Cords of bunched or double ends to edge the crinkle stripes give a pleasing effect. White crinkle stripes and color in the ground stripes are very popular, as are also solid color warp effects with white filling. Rayon of 150 denier is extensively used for filling, on cotton warps.

A great variety of weaves and patterns may be obtained on dobby looms. The 2 x 2 basket weave and mock-leno effects are very useful in the ground stripes. Dobby patterns may be developed by using ornamental figures on a plain weave ground, and the figure brought out in two

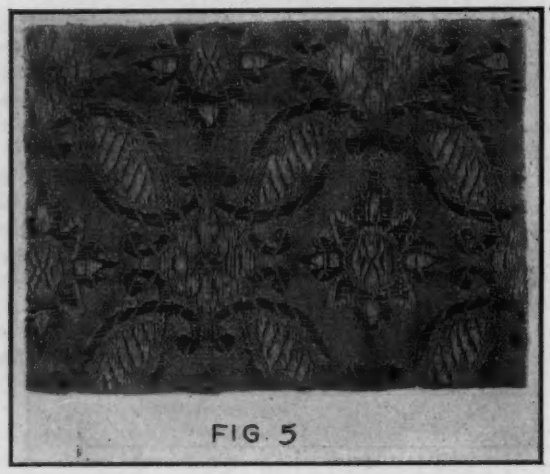


FIG. 5

colors by using both warp and filling float. Narrow stripes are made on single or two-scale order, and on a point draw, while wide effects may be planned on a fancy draw.

A novel bedspread has been brought out recently using the mock-leno weave shown at Fig. 3 on a plain weave ground. A section of the drawing-in draft necessary is shown at Fig. 4. The figure is developed on the block motif formed by the weave, thus permitting a very wide repeat, about six to ten inches wide on the ordinary dobby. Careful planning will give a figure that has all the appearance of a jacquard pattern.

Crinkle bedspreads are woven on a jacquard loom in the same manner. The cards are usually cut to weave the cloth face up. The best way to design the ordinary plain weave fabric is to wash the figure in with some transparent color, say red. The plain weave or tabby is painted on the ground with the same color. The bindings are then placed on the figure with white or black paint, on the same tabby as the ground weave. The card cutting directions, to weave face up, are,—cut white, (or black) and paper. This gives a plain weave fabric with the figure developed in filling float, on the face, and warp float on the back.

The bindings suitable for use on the figures are dependent on the construction of the cloth. The extreme floats should not be longer than one-sixth of an inch. For instance, should the cloth be a 60 x 54, the longest binding should be a 9 x 1 twill, while other suitable bindings for this construction would be the 7 x 1 twill and 5 x 1 twill and the 8-shaft satin weave. Too long floats will cause the fabric to appear ragged.

Figure 5 shows a handsome reversible bedspread made on the duplex order, with a cotton warp and rayon filling. This is woven on a tabby ground with both warp and filling float. Where the filling is floated on the face, the warp appears on the back, and vice versa, therefore care should be taken when designing to keep the two effects balanced, in order that the fabric may look equally well on both sides. The point paper design for the fabric should be painted as follows. The warp float is indicated in red, the filling in yellow. The tabby ground is painted in red, the red figure is bound on the ground tabby with black or white, and the yellow figure bound on the opposite tabby with red. The card cutting directions are,—cut red. A section of the point paper design is shown at Fig. 6, on which the yellow is represented by crosses and the red by full squares.

Other jacquard bedspreads are made with a warp float 5-shaft satin or 8-shaft satin ground, and the figure in filling float developed with twills, satins and fancy weaves for binders. Usually a cotton warp and rayon filling is used. This style of spread is sometimes made with two colors of filling run pick-and-pick. This fabric is so designed as to cut two cards, one for each shuttle, from each line of point paper. The figure is painted in two colors, say red and yellow, and bound with fancy effects, shaped bindings, etc., on the tabby cord. The satin ground may be painted in in two different colors or cut in by the card stamper. A third effect may be obtained by allowing both shuttles to float together. This effect is painted in a different color, say blue, and when binding, care should be taken to bind it both warp and filling ways. The card cutting directions are as follows:

First card. Red shuttle. Cut tabby on the yellow, black (or white) and ground satin.

Second card. Yellow shuttle. Cut tabby on the red, black (or white) and ground satin. This fabric may be further enriched by using one running shuttle and planting the other, in which case care should be taken when designing the planted figures to prevent them overlapping at the change of color. This style may be cheapened by having the second or planted color brought to the face in scattered places or as spot figures only, and, where it is all on the back of the cloth, using a cotton filling in place of the more expensive rayon yarn.

Power Transmission Association, Drexel Building, Philadelphia, announce they will make an award of $250.00 for the best slogan emblem design for the Association, received on or before June 5th. The object of the Association is to determine and foster the right drive or use of mechanical power transmission for any given installation in any factory, shop, or place where power is used to drive machines. The wording of the emblem should typify this objective, with a striking action design, showing some application of or relating to mechanical power transmission. What is desired is something effective and striking, like "Save the Surface," or "Say It with Flowers." Suggestions should be sent to the address given.

CURRENT TOPICS

Reduced Imports of Cotton Cloth.

Despite the prominence of a few kinds of imported cotton goods, it is noteworthy that American consumption of cotton cloth made abroad has been falling off rapidly during the last several years. Imports of cotton piece goods reached a peak of 218,970,000 yards in 1923. Then there was a drop, followed by a brief period of gain. But since early 1925 the total volume of imports has been, on the whole, decreasing. In 1926 only 60,680,157 yards came in from all countries. The value of these imports was $16,257,721. The figures, however, are still above those of 1913.

Continental countries, notably England, appear to be regaining their pre-war position in the cotton piece goods markets of this country. Imports from Japan grew immensely during and following the war. They ranked second for all countries in 1924, but in 1926 they were only slightly above the 1913 volume from that country. This would seem to weigh against any serious fear of overwhelming competition from the Orient, where, notably in Japan and China, there has been great expansion in cotton textile manufacturing. Nearly 60 per cent of the cotton cloth coming in last year consisted of poplins, broadcloths, madras, oxfords and other shirtings.

Frenzied Education.

At a recent National Education Association convention just one out of several thousand teachers voted nay on a resolution calling for the establishment of a Federal Department of Education. The organization that is the chief backer of the proposal is now one of the largest in the country, having a membership of about 175,000. The members are distributed throughout the country, in places that give to them exceptional influence. They have never fully used the vast power which they possess because of their numbers, their intelligence, their high respectability, and the deference which by the nature of their calling the teachers invariably command. But they are approaching the point, in organization and spirit, whereby they can and no doubt will use it in influencing public actions of the national kind having to do with education. They have the support, en re the proposed national department, of many other organizations, notably one of women and others of the uplifting kind.

They have abandoned or suspended the part of the original demand which called for a large Federal Government subsidy for common school education. It is no doubt a suspension only; for the demand most surely will be renewed when the department is created as it very probably will be.

The argument for a department, and for a large Federal appropriation to help the States provide more schools and better salaries for teachers, "looks good" on the surface. Isn't education as important as labor or commerce or agriculture, all of which and others, have departments in the Government, headed by cabinet members, and large appropriations for promoting the interests of the industries or people thus "recognized"? If the Government spends large sums of money on promoting the development of better pigs why should not appropriations for better children, via the schools, be made?

In fact education, as a veritable industry, has become equal, in many respects, to that of commerce or agriculture. More than a million persons, as teachers, now belong to it occupationally. About thirty million persons, or more than one-fourth the population, now is engaged chiefly in attending, as pupils or students, various kinds of schools. And the Government can collect any amount of money from rich sections for spending on schools in "poor" sections.

But that kind of argument, however appealing, does not dispose of the question. A Federal Department of Education will be a move towards Federal Government control of the schools. It will mean putting them into national politics. For a department will be useless unless it has funds for spending on schools and the spending will be futile unless the objects are controlled by the spending agency. Anything which a department, without subsidy-granting funds and power of control might do can be done by the United States Bureau of Education, now of long and creditable record. A lock-stepping system of Federal schools will mean the Prussianizing of America beyond the pattern designed by the German oligarchy.

The continuing demand for the Federal department is but a symptom of educational commotions of singular interest and high concern to everyone. This country only recently attained its educational adolescence and is puzzled and disturbed by the new condition. Within the last ten years schools have multiplied and grown in the United States as never before during a similar period in any country. Compulsory education statutes are now universal throughout the country. The school is taking over more and more of the prerogatives of the home, the church and the job. Children now belong as much to the teacher as to the parent. And the teacher still is in much part an amateur, knowing and caring little for tradition, very conscious of power, and having the desire of the enthusiast for more. High schools have expanded tremendously and the colleges are finding it all but impossible to handle the hordes battling for admission at their doors. Many leading educators of unquestioned authority are alarmed by it all and are calling for a reconsideration of former assumptions, if not a halt. They say the schools are being overwhelmed and slowed down by large numbers of students who would be getting a better education, for them, if they were at work. Some of the colleges have instituted systems that aim at keeping the number of students within the bounds of fitness. These have abandoned the commonly accepted principle that everyone should be given all the schooling possible.

The long struggle for the proper recognition of the worth of formal education has culminated in a success which identifies schooling with all education. This is worse than

the old view which held schools to be in most part luxuries. The best of true education is procured outside of schools, which can only supplement and improve that which must be otherwise obtained. To look to schools for all of it will mean, in future, a people without initiative, individuality or self-reliance. And this will be done if the educational policies of the country are left to teachers in the mass. For the average teacher is prone to make of schooling a cult, to be pursued and employed in all cases for itself alone.

The American frontier or country school of old was probably on the whole the best, when measured by results, ever devised. It helped to produce a people that were better informed regarding their times and, in the sound sense of the term, better educated than the product of its elaborated and systematized successor of today. It was not sufficient but its deficiencies have been made up for more in appearance than in actuality.

Of all institutions the school should be kept—especially in the matter of control—close to the home and the community. Any suggestion that it be Federalized should be rejected as a thing abhorent; moreover, as something fraught with peril.

Looking for Something that Isn't There.

Someone describes metaphysics as a blind man searching a dark closet for a black cat that isn't there. The same might be said of a public operation that now has been going on for more than a dozen years, at a cost already of more than one hundred million dollars. It is the work having to do with determining the money value of the railroads of the country. The work as carried on reached for the first time something like a milestone recently when the Interstate Commerce Commission made a final finding of value in the case of two tiny railroad properties. Since the finding will be used in recovering money under the recapture clause of the Transportation Act—which permits the Government to take over one-half of all earnings above a return of 6 per cent on fair value—some of the difficult problems may be advanced towards judicial determination. The biggest issue in the finding has to do with the commission's ruling that no allowance will be made for changes in the value of the dollar. The finding of value is based on the worth of the property as it stood in 1914, plus additional investments since then, and less depreciation. This means no consideration for the "buying power" of the dollar at any time. It means, for all the railroads, a finding of total value that will be ten to fifteen billion dollars less than it would cost now to reproduce the properties as they stand.

The question, with many others, will go to the courts, whose decision to date give support to every imaginable answer. In fact, for the big problems involved in the undertaking there are no exact solutions. The railroad system is practically complete. It was developed under conditions that no longer and will never again exist. From now on there will be only incidental additions. Abandonments of old will probably exceed the construction of new mileage. Public regulation of rates takes the ebb and flow of earnings out of the realm of normal economic laws. Thus in regulating earnings, the Government exercises an all but controlling influence over sales value, which may be above or below true value.

Any finding of value must be in some extent arbitrary, for there is no scientific basis on which it can be made. To date, all effort to determine the real value of the railroads has been scarcely more than a mental exercise. Those who caused the job to be entered upon held that the work could be done in two or three years, at a cost of only a few million dollars. The work as planned is not half done. The huge court controversies that will follow upon the application of findings of value to concrete operations, such as the fixing of rates, have hardly begun.

It is doubtful if the job ever will be really completed. Sooner or later a policy different from what it contemplates will have to be adopted, particularly as to rate regulation. For there is now scarcely determinable such a thing as the true or fair value of all the railroads. One might as well try to fix the money value of all the highways and streets.

Foreign Cotton Production.

The seeming addition this year to the surplus of cotton that came over from the previous season is offset, it is worth while noting, by a decline more than one-half as great in foreign production of this product. Latest figures give foreign production in 1926-27 in principal producing countries as 8,854,000 bales compared with 10,126,000 during the previous season. It is doubtful if the American crop will be much more than 2,000,000 bales larger than that of the last season, whose yield, however, was extraordinary in the matter of volume.

It would seem unlikely that production abroad will be as large during the coming season as in the last. Foreign production is affected more by price levels than is that in this country. In many of the cotton growing realms abroad the growers have a wider range of choice between cotton and other products than, in actual practice, have planters in this country. The biggest decreases occurred last year in the three countries which are America's most serious competitors in the growing of the world's cotton. These are Egypt, India and China, in which aggregately the decrease was about 18 per cent.

Cotton growing was stimulated in many areas abroad during the period of curtailed production in this country and consequent high prices. It is evident, however, that America's supremacy in the growing of this product still is invincible.

Planting in the Dark.

Several years ago the United States Department of Agriculture instituted the practice of collecting information from farmers regarding "intent to plant" various crops. It is done in the same manner as information is collected regarding actual acreage planted, abandoned and harvested, with recurring forecasts as to yields. It happened that one of the first reports on "intent to plant" cotton had a bearish effect on prices, since it indicated a big increase in acreage for the product. Thereupon Congress forbade the department to put forth any more reports of that kind on cotton. The department still issues "intent to plant" reports for other products.

The inhibition as to cotton must be a handicap to cotton farmers, who thus are deprived of authoritative information which might be of great help to them in shaping their plantings in accordance with prospective needs. The

departments reports are not impeccable but they are probably the most accurate of the kind coming from any source.

Farmers in the cotton country still have the benefit of other reports which, in some measure, are guides as to cotton. For intent to increase plantings of other things naturally implies decrease in cotton acreage. For example, the reports on the grains indicate an increase of about 6,000,000 acres for those products in the South this year. An "intent to plant" report on cotton this year probably would have been of bullish tenor.

The Weaver's Knot and Production.

BY A MEMBER OF THE STAFF.

Not so long ago a friend of mine, who is intimately connected with the production in a very large cotton mill, was discussing with me the various things developed recently which he had found of assistance. He is of that open-minded type whom you will find willing to experiment with a new proposition and give it a thorough trial, but at the same time, his responsibility would not permit him to approve something without the ability to prove its value.

We had been talking for some time about various things in different parts of the mill, and I asked him what he thought about the weaver's knot and its advantages so far as average constructions in a cotton weaving mill are concerned. I knew of course that for the finer yarns going to the knitting and mercerizing trades, the weaver's knot was obviously receiving widespread attention, but knowing that this man made largely the comparatively coarser constructions of goods, I wanted to get his slant on it.

He told me that he is using over a hundred hand knotters at the present time, basing his decision to adopt the weaver's knot upon two major improvements or advantages.

In the first place, he said, he could note a decided improvement in the appearance or quality of the work, and, second, there was an increase in production in the weave room, due to a decrease in the number of breaks on the loom as a result of knots failing to pass through the reed and harness. He took out his data book, and read me the following result of a test which he had conducted. Taking three looms using warps tied with the regular chicken-head knot, and three other looms using warps on which the weaver's knot was used, he classified the knots as large knots, gouts, and kinked knots, and the following table was the result. The figures represent loom stops from the different causes indicated:

WARPS WITH CHICKEN HEAD KNOTS.			
Large Knots	10	9	7
Gouts	7	2	10
Kinked Knots	29	19	23
WARPS WITH WEAVER'S KNOTS.			
Large Knots	1	7	2
Gouts	5	7	7
Kinked Knots	0	9	2

This test was made on six looms, running on a 90-inch, .88-yard, 60x56 construction, using 12½s warp and 12s filling. The mill man pointed out, by the way, that he could run this two in a dent through the use of weaver's knots, instead of three in a dent, on the same construction of goods, using a finer reed, thereby producing a much better appearance on the goods.

The figures are interesting on a comparative basis. It is noted that the gouts, which are not affected by the type of knot, are approximately the same. A difference is noted in the number of large knots, while the most interesting feature of the test is the difference in the number of kinked knots. This represents one of the big advantages of the weaver's knot, according to my friend, who explained that where the hand knotter is used, in tying the weaver's knot, the spooler hand holds the end so that it is drawn tight, eliminating any tendency to kink. .....

Taking up the feature of improved appearance and quality, the mill man explained that the weaver's knot is so tied that it occupies a minimum of space. The result, he pointed out, is that a much larger percentage of the knots go through the harness, but when in the weaving, they are "woven under" because of their smaller size and the fact that the tails lie with the yarn. The fact that they are woven under prevents the brusher from picking them up after they have passed the burling tables, and presents a better appearing cloth. Against considerable kicks on knots before adopting the weaver's knot, he said they had not had a complaint from this cause since its adoption.

While my friend was discussing the subject, another visitor came into the office, the superintendent of another mill, and contributed the information that he was positive he had less loom stoppage through the tying of the weaver's knot in the warps. On some of his fabrics, he pointed out, which are largely of sheeting construction, he had found it is best to weave one end in the dent, and that when the weaver's knot is used, it slides through the fine reeds much better.

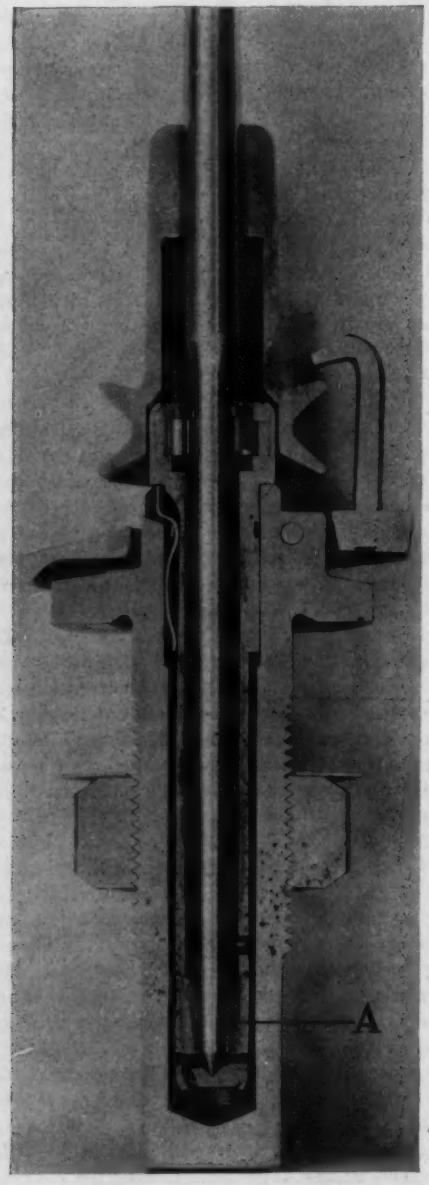
We seemed to be organizing a round-table on the subject, for I was able to add some information that a friend had given me previously, which was to the effect that the total loom stoppage in his weave room had been reduced something like 15 or 20 per cent. Since the stoppage caused by the chicken head knot was a prolific cause of irreparable bad places, there was a great reduction in seconds because the weaver was allowed more time to look after all of his looms. At the same time, this man had informed me that he had found the cost of spooling to be increased somewhat at the start where the hand knotter was used, and that the spooler help became more highly skilled and harder to train. However, he assured me, he felt that the advantages as outlined more than over-balanced these local conditions which could be remedied with a little time and training.

The New S K F Spindle.

For years the interest of those concerned with progress in spinning has been given to the possibility of an anti-friction bearing spindle for the spinning frame. The biggest obstacle to overcome has been to use a bearing confined to such a small space that the present whirl diameters may be maintained. That part of the bolster on any spindle immediately opposite the intermediate portion of the whirl receives the greatest side pull, or radial load, and consequently the ball or roller bearing would have to be located there. With a 15-16-inch whirl, after deducting the thickness of the whirl, and allowing for clearance between the inner surface of the whirl and bolster, very little room is then left for an anti-friction bearing. This has necessitated the use of a small ball bearing with a load-capacity considerably below the load to which it is subjected, with the result that it was found impracticable because of the small space in the spinning frame spindle. On spindles of larger whirl diameters, such as twister spindles, the space permits the use of a sufficiently large

ball bearing, but the cost has been in a way prohibitive.

The S K F Industries, Inc., have recently placed on the market, after seven years of test and inspection following its perfection before it was introduced commercially, the S K F spindle, which is illustrated in the accompanying cut. The exterior of the spindle is the same as the ordinary spindle, but the interior differs materially. The new spindle consists of the blade and whirl; the base; and the bolster. The blade is made of the highest grade steel. That part of the blade immediately opposite and below the



whirl is subjected to a hardening process which will be explained, and the part in contact with the rollers has been machined to close tolerances. The base differs slightly from the ordinary base, in that provision is made to receive a a larger bolster.

The bolster consists of the shell, the neck bearing and the step bearing. The shell is made from high grade steel, finished to close limits and interchangeable with shells made years afterwards and years previously, it is stated. The neck bearing consists of an S K F cylindrical roller bearing, made up from a series of cylindrical rollers, an outer raceway, a heavy comb-shaped retainer and two guide discs. All parts of the bearing have been ground and polished to close tolerance limits. The step bearing is made from glass-hardened chrome alloy steel in which the glass-hardened point of the blade is revolving. The lower end of the blade is pointed to an angle of sixty degrees, ending in a ball point of a small radius. The cavity of the step bearing has an angle of eighty degrees. Above the step, the blade has a taper of two degrees, thirty minutes, whereas the sides of the step-bearing incline at an angle of two degrees, forty-five minutes. The theory being that after several years, as the step wears at the ball point, the blade settles until its sides come in contact with the sides of the step bearing at the point *A*, by a circular line contact which will be worn down a few minutes until the step and bearing again connect at the ball point. In other words, the step bearing is self-adjusting for wear.

The bolster is self-contained and can be removed from the base as easily as any ordinary plain bearing bolster, it is stated, and in the same manner, the spindle may be removed from the bolster. There is no danger of any part of the bolster becoming loose or dislocated when the blade has been removed. In the same manner as a plain bearing spindle is self-centering, so is the new spindle self-centering, it is stated, without losing its rigidity.

Two interesting features are discussed in connection with this new spindle—lubrication and power. As to the first, the company states that nearly three years ago, ten spindles were filled with the proper quantity of oil, and sealed, one spindle being opened at one year intervals. The second spindle, run two years with the original lubricant, it was stated, was found with plenty of oil in the base, and the remaining eight spindles are still running accurately. The company states that at a conservative estimate, this would mean that the spindle needs oiling only once a year, and cites the instance of large foreign mills where these spindles have been operating for six and seven years adopting this method.

As to power consumption, some interesting tests have been made. It is generally stated that of the power required for a spinning frame 60 to 70 per cent is consumed by the spindles, and a saving of half of this power is claimed for the new spindle, or 25 to 35 per cent of the entire frame's consumption. A test made in Europe on a frame of 110 spindles, 6,000 r.p.m. spindle speed, 20s, 30s and 38s yarn, showed the following results: On 110 S K F roller bearing spindles, 7-inch blade, the power consumption of spindles, countershaft, tightener pulley, and driving motor, amounted to 1.52-hp. On the 108 plain bearing spindles, 5-inch blade, it was 2.33-hp. The power consumption of the countershaft, tightener pulley, and driving motor amounted to .766-hp. Thus the power consumption of the spindles alone, with the S K F spindle, was .754-hp., and with the plain bearing spindle, 1.564-hp.

Seven years ago, the company installed 800 spindles in Europe, increasing the installations each year until now there are some 250,000 spindles in actual operation, it is stated. The wear of the step, it is stated, is not dis-

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cernible; the spindle does not "mount" or "leap", nor throw oil.

The S K F Industries, Inc., manufactures only the complete bolster, which is supplied to the spindle manufacturers as a self-contained unit. Spinning machinery makers, it is stated, are in a position to furnish this spindle equipment on specification.

What the Southern Mills are Doing.

The annual convention of the Southern Textile Association will be held at Kenilworth Inn, Asheville, N. C., on Friday and Saturday, June 17th and 18th, it has been announced by J. M. Gregg, secretary-treasurer. The Kenilworth Inn has been the scene of previous summer meetings of the Association, and contrary to their recollection of some meeting places, members recall the session there with pleasure. An exceptionally large attendance is expected to be on hand for an unusually interesting program, details of which will be announced later.

One of the more important items of southern mill construction of the past month was the announcement by the Dixie Mercerizing Company, Chattanooga, Tenn., that an $800,000 addition would be made to their spinning mill, bringing the equipment up to approximately 40,000 spindles. Robert and Company, Atlanta, Ga., are the engineers. When the addition is completed, the spinning mill will be 900x100 feet wide, and two stories high. A community house and sixty additional houses for operatives will be built in the village. The new dye plant of the company, located at the mercerizing plant, is practically completed, having a capacity of 20,000 pounds a week.

Another Tennessee item of interest is that the spinning mill at Prendergast has been acquired by Ocoee Spinning Company, of which C. B. Bagley, of Chattanooga, is president. According to report, W. Beswick, of the Shelbyville Mills, Shelbyville, Tenn., has been engaged to operate the plant for the new owners.

Report had it last month that the Pepperell Manufacturing Company, which operates a plant at Opelika, Ala., producing drills, will double the capacity of the plant there, moving machinery from some eastern plants to equip the addition.

Contract for the two-story addition to the American Net & Twine Company, Blue Mountain, near Anniston, Ala., together with changes in the boiler room and storehouse, has been awarded to A. K. Adams & Co., Atlanta, Ga.

The Arcadia Mills Company, headed by C. W. Johnston of Charlotte, has been organized to operate the Wilco Mill, formerly the Ronda Mill, at Ronda, N. C. Operations will be resumed at the plant, which has been idle for about two years.

Pinoca Mills, Charlotte, N. C., organized for the manufacture of rayon draperies, have let contract to T. C. Thompson Co., of Charlotte, for the erection of the first unit of their plant, which will be 84x240 feet, containing an initial installation of 100 looms.

A three-story warehouse, containing approximately 40,000 square feet of floor space, will be built at the Gibson Manufacturing Co., Concord, N. C., it is announced. Lockwood, Greene & Company, Charlotte, N. C., are the engineers.

Acme Spinning Co., Belmont, N. C., has issued $400,000 in new preferred stock, the proceeds of which will be used in enlarging the mill. It is understood that an addition containing 16,000 spindles which will double the size of the plant, will be erected.

Elmira Cotton Mills Co., Burlington, N. C., have resumed operations under the new corporation which recently purchased it from the receivers. The new company is headed by W. T. Cheatham, R. W. Barnwell and Paul Stevens.

King Cotton Mills, Burlington, N. C., are to erect a $30,000 manufacturing addition, it is understood.

The $150,000 addition to the Jennings Cotton Mill, Lumberton, N. C., to be 132x143 feet and to contain 168 looms, is practically completed. Additional houses are being built in the mill village, and considerable increase in the housing facilities in the Mansfield Mill village is also being made.

Some additional cards are being installed in the plant of the Cliffside Mill, Cliffside, N. C. Highland Cotton Mills, High Point, N. C., are also adding some cards.

It is understood that the Shelby Cotton Mills, Shelby, N. C., will install 168 new Draper looms to replace old equipment, and that ten additional houses will be erected in the village.

Erwin Cotton Mills, Erwin, N. C., have ordered two additional high speed warping units from the Cocker Machine & Foundry Co., of Gastonia, N. C.

Erection of an addition to the Mills Mill No. 2, at Woodruff, S. C., with 10,000 spindles and complementary looms and the necessary village to house the labor, has been announced. This will give the plant approximately 30,000 spindles. The new plant will manufacture fine goods, principally broadcloths. The original plant manufactured yarns only, so that between 700 and 800 looms will be required.

Arcadia Mills, Spartanburg, S. C., will install some 6,000 new spindles and 200 new looms, it is announced by H. A. Ligon, president, which will bring the equipment to 52,000 spindles and 1,350 looms. Whitin Machine Works, Whitinsville, Mass., and the Draper Corporation, Hopedale, Mass., will furnish the equipment, it is understood.

It is announced that 100 new E Model Draper looms will be added to the Appleton Manufacturing Co., Anderson, S. C., and that 25 new cottages will be added to the village. J. E. Sirrine & Company are the engineers. Fifteen of the cottages will be of six rooms, and the remaining ten will be four-room dwellings.

Gossett Dyeing and Finishing Company, Anderson, S. C., has been organized, with a capital stock of $200,000. Samuel H. Lander, president of the LadLassie Mills, Anderson, S. C., heads the new company, and James P. Gossett is chairman of the board.

Judson Mills, Greenville, S. C., is to build a two-story, 85x100 foot community building, to contain gymnasium, balcony and locker rooms, club rooms and general assembly hall. Haskell Martin, Greenville, is the architect. Contract has been let to the Carolina Construction Co.

Enoree Converting Co., Pelham, S. C., has been organized for the purpose of manufacturing thread for the wholesale trade. H. T. Crigler is president and treasurer, and J. C. Stuart is secretary and assistant treasurer.

A pump house and water line, to cost about $10,000, will be built by the Union Bleachery, Greenville, S. C.

An addition at Mill No. 2 will be built by the Jackson Mills, Wellford, S. C.

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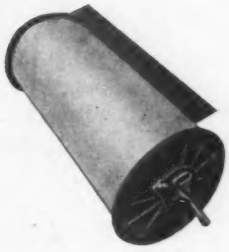


To
Loom Beam

Are Producing

The Best Product at The Lowest Cost

It Pays to Install Modern Machinery

Saco-Lowell Shops

147 Milk St., Boston, Mass.

Southern Offices:

Charlotte, North Carolina — Atlanta, Georgia — Greenville, South Carolina

An addition, to allow the re-arrangement of machinery so as to combine manufacturing departments, is being erected at the Manetto Mill, Lando, S. C. .

The Liberty Fabrics Corporation, Union, S. C., the first glove silk and glove silk underwear manufacturing company in the South, has been organized with Emslie Nicholson president; B. F. Kennedy, treasurer; and D. N. James, secretary and assistant treasurer. The company has a capital stock of $350,000. It is understood that the plant will be ready for operation shortly. Machinery will be removed from New York. S. B. Rains is general superintendent.

An addition to the towel manufacturing plant of the Halifax Cotton Mills, South Boston, Va., is being made, and a number of new houses are being added to the village.

Monticello Cotton Mills, Monticello, Arkansas, which has been undergoing extensive improvements, held a formal public opening on April 20th. Forrest B. Gardner is general manager.

Magnolia Cotton Mills, Magnolia, Miss., have been organized, with a capital stock of $500,000, of which $100,000 is pledged by H. C. Couch, of the Arkansas Power & Light Co. T. S. Grayson is president, Joe Hutcheson first vice-president, J. L. Davis second vice-president; and J. B. Lee secretary-treasurer.

New England Mill Situation.

The first quarter of this year has proved to be the most satisfactory one the New England mills have had in three years or more. The improvements that set in last fall continued right up to the first week in April, and it then began to drop only in a seasonable way. The sharp improvement in cotton goods mills has been in marked contrast with conditions in the woolen and silk industries. There has been a steady improvement in the machine shops but it is still very far from indicating anything like a broad and well sustained demand for new equipment.

The many bad spots in the New England industry constantly come to public attention and they are so numerous that even though many of them have been discounted by experienced financiers and manufacturers, yet they continue to form a menace to investment and a cause for recurring bursts of pessimism from those whose investments have been injured and who refuse to consider textiles of much account in this section. As an offset to the gloom still to be found readily enough, there have sprung up all over New England this year groups of citizens or manufacturers who believe that the time has come to show the hopeful side of things and denounce the constant repetitions of untruths about what people really think here of what the future holds.

Financiers are rigid enough in their attitude toward borrowers of money for manufacturing and merchandising cotton goods. They are very much disinclined to loan to any mills showing an excess of debts over quick assets. They give very little comfort to those who would like to borrow to assist in resuscitating one plant or another, or to prevent the removal or closing of plants in various localities. The most marked change noted is in the attitude of many taxpayers in mill communities. They are demanding that mill assessments shall be made suitably and with a first thought to the earnings of the plants to be taxed.

The riot of spending freely for municipal and state improvements is ceasing. But it is no easy matter for officials elected to economize on municipal expenditures to put the knife into bills, or to throw some part of the unequal load of taxation from the mills to citizens and industries not connected with cotton manufacturing directly. The enactment of restrictive legislation at the behest of union labor has ceased. New Hampshire refused to pass a 48 hour law, and Rhode Island is disclaiming any thought of acceding to early agitation designed to force shorter hour legislation that State.

The public attitude toward the mills has its curious phases. In Lewiston, Me., where threats were published of a possible removal of the Bates Mfg. Co., of that city to some point in the South, the mayor of the city gave a hearing and listened to all that was said of the necessity for modifying the tax policy under which the larger share of the burden of valuation and assessment had been borne by the mills, largely as a matter of custom. There are several other plants in that city, the Hill, Androscoggin, and Continental mills being among them, and the Lewiston bleachery. All of these plants have had hard sledding to meet increasing tax bills and hold their place in competitive markets. It is yet too early to say to what extent actual reduction of taxation will take place this year but it is clear that citizens no longer propose to go ahead spending money for municipal improvement that will finally result in driving industries to more favored sections.

Several meetings were held in New Hampshire towns and cities at which the excessive taxes on industries were taken up and discussed freely. Established law affecting taxation makes it difficult to bring about in a legal way some of the things citizens are disposed to do at once to lessen taxation but eventually within a few years it will come about that systems of mill taxation will be revised in favor of industry and not against it.

In New Bedford, the center of the fine goods industry, where for some years past it has been a daily pastime to inveigh against manufacturers, managements, and mills in general, several meetings have been held at which the advantages of the city as a manufacturing center were discussed dispassionately, and the attitude was taken that it was full time to stop baiting the cotton mills. A Boosters' club was formed and the members are taking care to meet and defend the mill men, and to take public cognizance of misrepresentations of the actual conditions by people in or out of the city.

In Fall River, where the population has been declining and taxation rising, vituperation has been slowly giving way to a spirit of trying to get all the facts and meet them soundly. Owing to the extensive system of schools of a very high grade maintained by the municipality, the reduction of taxation has not been easy, but very recently the committee in charge of the schools desired not to attempt to build any more expensive buildings until it was clearly shown that some more economical way of meeting the situation was unavailable.

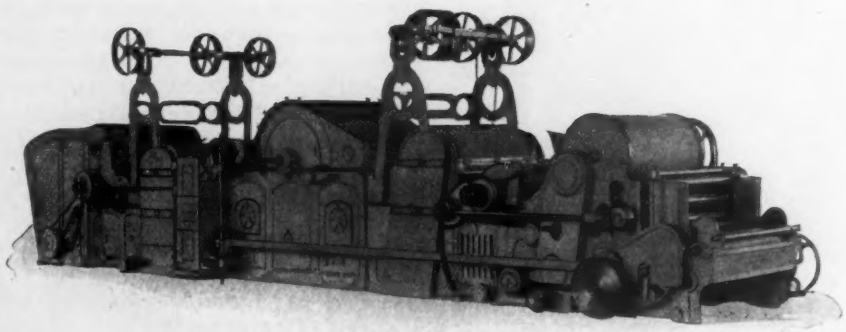
Some of the western Massachusetts and the Connecticut communities have been quietly conspicuous in encouraging any effort to lessen the tax burden on mills. In several cases attempted improvements certain to bring about large expenditures, have been voted down for no other reason than the people are beginning to see that economy in taxation is vital if the recovery of New England textile industries is to make safe headway.

H & B AMERICAN MACHINE CO.

Pawtucket, R. I.

Southern Office: 814-816 Atlanta Trust Co. Bldg., Atlanta, Ga.

Our New Consolidated
Automatic Feeder, Buckley Opener and Breaker Lapper



This machine combines greater cleaning power with more gentle treatment of the cotton. The Continuous Gridded surface from Cylinder to Cages and Full Width Feed gives Perfect Regulation of Weight, Improved Quality, Increased Production and Reduced Cost of Operation.

A Modern Consolidated Picker Unit
for all Classes of Cotton

Less has been said of the course of labor unionism than of taxation. But it is stated that on several occasions where textile union leaders have attempted to ride with a high hand, intimations from some of their followers have resulted in a change toward conciliatory measures in dealing with either the manufacturers' representatives, or the unorganized workers.

Much of the political and social change seen in many centers has been brought about through activities on the part of members of the New England Council to inculcate more sectional and local pride and to overcome the idle talk of "civic and social uplifters", who have had nothing quite so interesting to do as to air unAmerican, and disgustingly anti-New England views of social, religious, and political equities. It has been possible to suppress a great deal of idle chatter through the passing of dividends on old established industries. Those dividends served through trustee ownership and direction to furnish a secure living to many highly educated but nevertheless half-educated people who belittled anything that savored of New England thrift and common sense.

In this connection, it is interesting to note the serious interest shown in some parts of New England recently because of a statement of southern operative and living conditions in industrial centers, emanating it was said from bishops and clergymen. One of the most gratifying reactions to the talks of these learned men was the quick assembling of manufacturers and others ready to defend their position by pointing out the extraordinary uplift that has actually taken place in a single generation among those who have become skilled mill employees. In other words, the southern manufacturers and leaders in industrialism were determined not to take a "licking lying down", whatever justification preachers or teachers may think they have for their sharp and widely circulated criticism.

Many New England manufacturers and investors have a money interest as well as other interests in southern industries, and they rather feel quietly elated that the real workers there stand ready to admit their faults, whenever constructive criticism is offered to them, but also to fight back good and proper, when half a tale of conditions is given circulation, to the derogation of industry, by men whose position should be an assurance of the fair balancing of all of the facts.

The fine and fancy goods industry in New England is easily in the strongest position for some years past. Stocks are at a minimum and contracts are being placed on fine fancy materials for early fall delivery. Premiums have been paid for spot deliveries of rayons, dimities, silk and cottons, some of the broadcloths, and voiles. Contracts have also been placed by converters with a feeling of greater security in value than has prevailed for two years, at least.

The gingham mills are still staggering along with improvement slow but unmistakable as compared with last year. Finishers are busier than they have been for years. Corporation printers are all running their plants overtime trying to meet deliveries asked for. Percales have sold very freely. Greater quantities of rayon yarns are now being used in New England mills than ever before and the demand for the fine sheer rayon fabrics in voile, and box loom weaves has been very strong and active. Rayon alpacas have sold to the extent of 300,000 pieces for deliveries this year, in the estimation of some handlers of those lines.

The bleachers have not done as well as the printers, and the wide sheeting mills have been forced through increased competition to run along on a full product on a very narrow profit margin.

Prospects for a continued good business are very fair. New England attributes its measure of improvement to the lower and steadier price of raw cotton than in any recent year, and to the stability of low prices for cloths. Printed goods have undoubtedly been produced and sold in larger quantities than ever before for dress purposes and the revival of better qualities of fine yarn dyed cottons and sheer rayon mixtures for summer wear is becoming noticeable, thus foreshadowing another good spring season starting late this year. There are still many idle plants and plants in the hands of creditors but on the whole the New England textile industry is pulling stronger and has probably seen its worst days for a long time.

Cotton Comment.

BY H. AND B. BEER.

New Orleans, April 5th, 1927.

Although exports from the United States and takings of American cotton by spinners of the world continue of record breaking proportions, the world's available supply of American, exclusive of mill stocks, remains large, about 9,594,000 bales vs. 7,099,000 last year, due to last year's enormous crop, which, while smaller than the government's estimate of last December, was more than ample for the season's wants.

Compared with one month ago values are about $1 per bale lower in consequence of a falling off in trade demand for raw cotton and cotton goods on both sides of the Atlantic.

REPORT OF THE INTERNATIONAL FEDERATION OF MASTER COTTON SPINNERS FOR SIX MONTHS ENDING WITH CLOSE OF JANUARY. (LINTERS NOT INCLUDED.)

Bales:—	This season	Last season
World's consumption for first six months	12,934,000	12,338,000
Of which American	7,224,000	6,974,000
World's mill stocks January 31st..	4,681,000	4,648,000
Of which American	2,988,000	2,862,000

These returns were rather disappointing so far as consumption is concerned, but since they represent the period when distribution was just getting under way, better results are looked for the last half of the season.

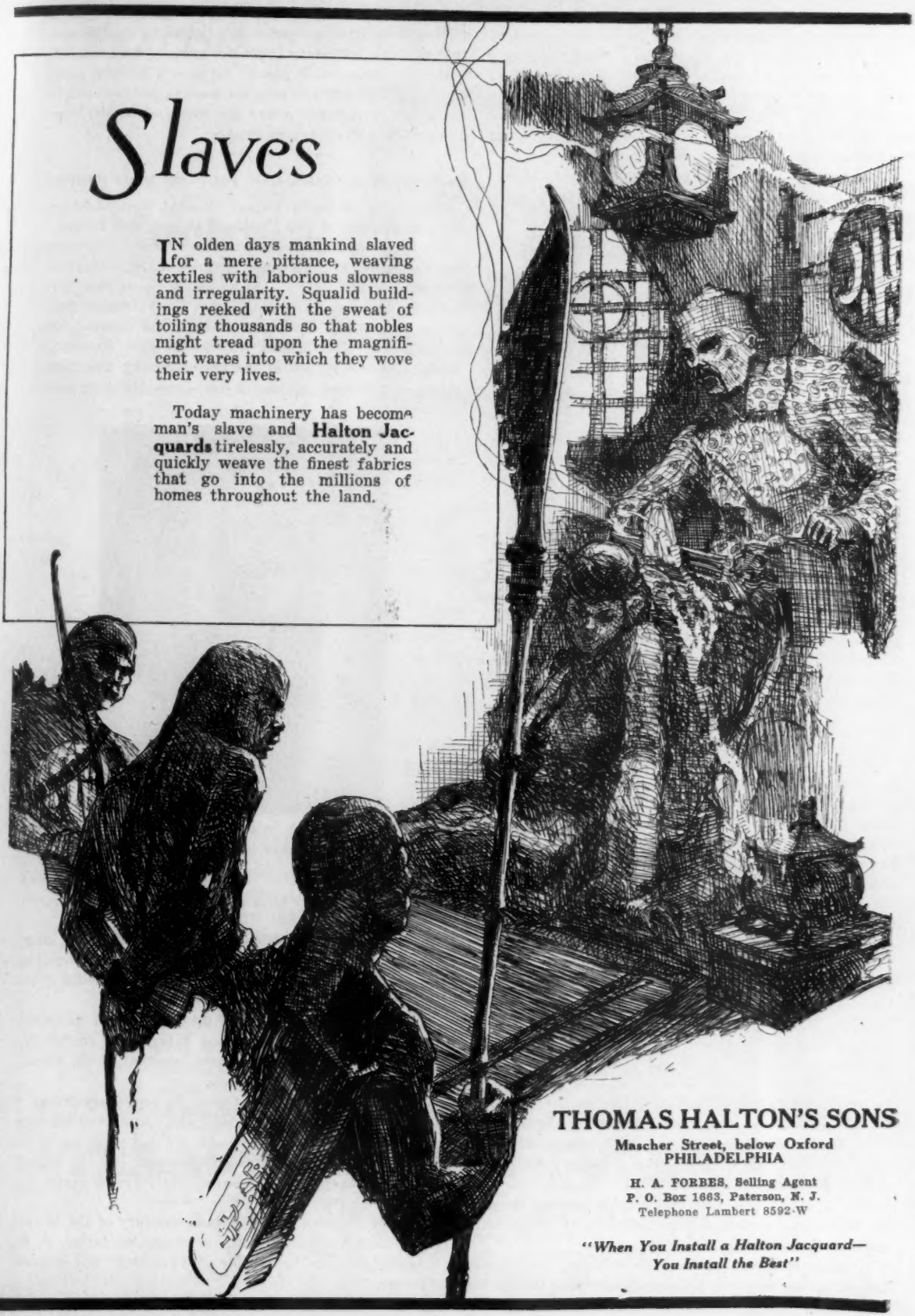
Compared with last season, exports from the United States to last Friday were 8,899,000 bales vs. 6,585,000, and spinners takings were 12,964,000 bales agains 11,656,000. Indications are that exports from the United States this season will approximate 11,000,000 bales vs. 8,252,000 last season and that spinners takings will approximate 17,000,000 bales vs. 15,090,000 last season. Nevertheless indications are that the world's carry-over of American cotton, including mill stocks, will be about 8,000,000 bales compared with 5,362,000 at the close of the last season.

As to preparations for the new crop, advices indicate that they are well advanced in the eastern half of the belt, but somewhat backward to the west of the Mississippi River where, however, better progress has been reported of late,

Slaves

IN olden days mankind slaved for a mere pittance, weaving textiles with laborious slowness and irregularity. Squalid buildings reeked with the sweat of toiling thousands so that nobles might tread upon the magnificent wares into which they wove their very lives.

Today machinery has become man's slave and **Halton Jacquards** tirelessly, accurately and quickly weave the finest fabrics that go into the millions of homes throughout the land.



THOMAS HALTON'S SONS
Mascher Street, below Oxford
PHILADELPHIA

H. A. FORBES, Selling Agent
P. O. Box 1663, Paterson, N. J.
Telephone Lambert 8592-W

"When You Install a Halton Jacquard—
You Install the Best"

due to more favorable climatic conditions. Returns to a private bureau indicate 88 per cent of the land prepared vs. 94 per cent at this time last year.

Concerning the contemplated acreage to be devoted to cotton this year, private returns range from an average reduction of 8.7 per cent to an average reduction of 16.3 per cent, while the consensus of opinion at present is that the average reduction will be about 10 per cent.

There is a good season in the ground this year, as was the case last year, especially in Texas, which is a big asset as regards the probability of making a good crop with anything like average growing weather in the future.

TOTAL TEXAS AVERAGE RAINFALL.

Inches:—	This season	Last season	Normal
For February	2.08	0.34	1.86
Oct. 1st to Feb. 28th.	12.83	12.34	10.78

Returns as to fertilizer sales in the cotton region indicate the probability of a greater use of the plant food than thought probable one month ago. Sales to the close of February were about 35 per cent less than for the same time last season, whereas sales to the close of March are only about 25 per cent smaller than last year.

Returns to Secretary Hester show sales of fertilizer tags in nine cotton states, for eight months, August to March, both inclusive, to have been 1,928,950 tons vs. 2,583,206 tons for corresponding time last season.

Concerning the boll weevil, Washington reports: "The Mississippi Valley may expect a somewhat heavier infestation than was experienced in 1926; the infestation decidedly decreasing to the eastward. However, in the eastern areas sufficient weevil will be present to cause serious damage, provided weather conditions during the cotton growing season are favorable for weevil development. In Texas, especially in the central portion, the weevil population was decidedly increased during latter part of 1926."

T. B. Wood's Sons Co.'s 70th Anniversary.

The T. B. Wood's Sons Company, Chambersburg, Pa., manufacturers of power transmission machinery, is celebrating the seventieth anniversary of its establishment. Early in 1857, T. B. Wood, who was then master mechanic of the Franklin Railroad, together with Peter B. Housum, a young millwright of considerable ability, formed a partnership beginning business on May 1, 1857, under the name of Wood & Housum, to manufacture appliances for producing and transmitting power. Housum was killed in the Civil War, and the business was continued by T. B. Wood until 1868, when his son, George A. Wood, and Levi D. C. Houser, shop foreman, were taken into the firm. Mr. Houser retired in 1884, being succeeded by Theodore M. Wood. The name was chaanged to T. B. Wood & Sons, and continued until T. B. Wood's retirement in 1889, and George A. Wood and Theodore M. Wood conducted the business under the name of T. B. Wood's Sons. In 1899 Charles O. Wood was taken into the firm.

The business was incorporated in 1906, Under the name of T. B. Wood's Sons Company, with George A. Wood, president; Theodore M. Wood, vice-president; William H. Fisher, secretary; Charles O. Wood, treasurer. In 1925, George A. Wood, president, died and his brother, Theodore M. Wood, was elected president, Charles O. Wood being made vice-president.

During the seventy years of its existence, the company has specialized in power equipment, and today its line embraces shafting, couplings, set collars, pulleys, hangers, pillow blocks, friction clutches, belt tighteners, rope sheaves, ball bearings, and every appliance needed for the mechanical transmission of power. Its growth has been a part of the developments and progress made in this line, and the organization represents today the result of seventy years of specialized effort and experience.

Fairbanks-Morse Takes Over Fairbanks Scale Business.

Fairbanks, Morse & Co., of Chicago, has taken over the scale business of The Fairbanks Co., of New York.

In 1916 Fairbanks-Morse purchased E. & T. Fairbanks and Company, with its scale factories at St. Johnsbury, Vt., and East Moline, Ill. The Fairbanks Co. of New York, however, held the distributing rights for Fairbanks scales in the eastern and southern portions of the United States and abroad. The present transaction gives Fairbanks-Morse complete control of the manufacturing and distribution of Fairbanks scales. A scale manufacturing plant

W. S. Hovey, the New President.

at Birmingham, England, as well as the London sales agency and all other sales agencies throughout the world, are included in the deal.

Fairbanks, Morse & Company is well known as a large manufacturer of Diesel engines, electric motors, pumping equipment, home light and water outfits, windmills, coaling stations, railroad standpipes, etc.

Practically coincident with the change just described the directors of Fairbanks, Morse & Company, elected W. S. Hovey as president, the former president, C. H. Morse, becoming chairman of the board.

The elevation of Mr. Hovey to the presidency brings a man to the helm of the company who has worked his way up through the ranks, and who has a thorough grasp on all factors of this widely extended business. He will remain general manager, a position he has held for many years.

HARRY KILGORE has been made secretary of the Woodruff Mills, Woodruff, S. C., succeeding his father, J. B. Kilgore, who has been made vice-president and general manager.

TEXACO—for Dependable and Economical Lubrication—TEXACO

This Priceless Service to every TEXACO Customer—to YOU, for example

Much has been written regarding ways and means of obtaining improvement in the operating and production ends of the Textile industry. Being in the oil business, we'll stick to that end.

And, while we can say (with pardonable pride) that we know *our* business, we never for a moment lose sight of the fact that *you* know *yours*.

Take the lubrication of your textile machinery, for instance. You know that end of it pretty thoroughly—but can you know *too much* about it?

Isn't it reasonable that The Texas Company's staff of Lubrication Engineers—men who have spent years in perfecting their knowledge of this highly specialized branch of Lubrication—can assist you in obtaining even lower maintenance costs, in securing *better* machinery operation, in obtaining *greater* production—and *greater* profits?

It is more than reasonable. It is possible.

Time and again, often in cases where we were told it couldn't be done, our Lubrication Engineers, after cooperation with the principals in charge of lubrication, have shown the way to improved machinery operation—and worth while savings in lubricants and costs. If you wish it, we are prepared to effect similar savings through your plant. Not by guesswork, but by keeping accurate cost records that speak in terms of dollars and cents.

When a TEXACO Lubrication Engineer makes a recommendation regarding the *kind* and *quality* of lubricant to use, he is speaking with *more* than the authority of his own convictions. Back of him is the collective experience of a group of men who have been testing, observing and recommending lubricants on every type of power unit and machine in the textile industry.

These men have found that different conditions require different lubricants. That older machinery may require lubricants quite different from that which is new. That different "hoop-ups" effect the type of oils which work best.

And when, within one company, where the same types of machines are used, an oil works better in one branch mill than in another (and this has been known to happen) our engineers will tell you of it and suggest the proper remedy.

Now, much as we believe there are many, many places in the Textile Industry where the free services of TEXACO Lubrication Engineers might be used with profit, we don't know it all, but by pooling our own experiences and knowledge with yours we know we can furnish a prompt and satisfactory solution to any problem relating to the selection of lubricants for any type of Textile Mill Machinery.

Do not hesitate to write us or ask us to cooperate with you in person. That is what we are here for.

TEXACO TEXTILE LUBRICANTS

THE TEXAS COMPANY

Texaco Petroleum Products

Dept. C5, 17 Battery Place, New York City

OFFICES IN PRINCIPAL CITIES

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

LUTHER H. HODGES, of the Carolina Cotton & Woolen Mills Company, Spray, N. C., was recently elected governor of the 57th District of Rotary International, at the annual convention of the district in Wilmington. The district contains forty clubs, and the governor has supervision of the work done by these clubs. Mr. Hodges' takes office on July 1st. Meantime, he will attend the convention of Rotary International at Ostend, Belgium, in June. Mr. Hodges is well known in southern textile circles. He is co-author, with Miss Harriet L. Herring, of the series of articles on Practical Industrial Economics now appearing in COTTON.

HUGH F. LITTLE has resigned as assistant treasurer of the Appleton Mfg. Co., Anderson, S. C., to accept a similar position at the American Spinning Co., Greenville, S. C. He will make his home in Spartanburg.

A. FERGUSSON MACINTYRE, who has been agent of the Fulton Bag & Cotton Mills, Atlanta, Ga., and of the Maginnis Mills, New Orleans, La., has succeeded Mr. Little at the Appleton Mfg. Co., Anderson, S. C., in the position of agent. J. N. Badger continues as superintendent at the Appleton plant.

ROBERT LASSITER, of Charlotte, has been elected president of the Mooresville Cotton Mills, Mooresville, N. C., succeeding J. E. Sherrill, resigned, who will, however, continue as a member of the board of directors.

JAMES LEE YOUNG, JR., of Macon, Ga., was presented with the National Association of Cotton Manufacturers medal at the Honor Day Exercises at the Georgia School of Technology, Atlanta, in April. Mr. Young is a student in The A French Textile School of the institution.

RALPH L. CHISHOLM has been made agent of the Winnsboro Mills, Winnsboro, S. C., succeeding Gordon A. Johnstone, who resigned to become resident agent of the Loray Mill, Manville-Jenckes Company, at Gastonia, N. C. Mr. Chisholm was at Winnsboro some years ago, later going to Boston as assistant to H. C. Everett, Jr., treasurer. He has recently been connected with the Lancaster Mills, Clinton, Mass.

CLIFFORD B. HAYES, for the past year production manager of the Pacific Mills, has become general superintendent of the Pacific Mills division at Lyman, S. C., succeeding Leonard S. Little, who resigned to become general works manager in charge of manufacturing at Joseph Bancroft's Sons, Wilmington, Del.

FESSENDEN S. BLANCHARD has been promoted from the position of assistant to the treasurer to the position of production manager of the Pacific Mills, succeeding Mr. Hayes.

NEWTON G. HARDIE has been promoted from production manager to superintendent of the Oconee Mills Co., Westminster, S. C.

JOSEPH E. HODGKINS has been appointed manager of the New England Branch of Jenkins Bros., with headquarters at 524 Atlantic Ave., Boston, Mass. Anthony D. Weber is assistant manager. After almost 40 years of service with the company, John D. Stiles, former manager, has passed from the active to the retired list, retaining his interest in the company.

S. W. GRIGGS, formerly overseer of carding at the Mobile Cotton Mills, Mobile, Ala., but more recently with the Montala Mfg. Co., Montgomery, Ala., has been transferred to the position of overseer of carding at the Autauga Cotton Mills, Prattville, Ala.

E. S. KENNEDY, formerly in the sales division of the Wildman Manufacturing Co., has become connected with The Viscose Company, traveling the Western territory with headquarters in the Philadelphia office.

HUGHES L. SIEVER, southern representative of the Borne, Scrymser Company, is now in Europe, accompanied by Mrs. Siever, inspecting the installations of Breton Minerol oil spraying process in several foreign mills.

OTTO PRATT is now representing the Edward H. Best Company in Georgia, Tennessee, Alabama, Mississippi, Louisiana and Texas. He has headquarters in Atlanta.

JAMES NEWSOM, formerly manager and superintendent of the Unity Cotton Mills, LaGrange, Ga., now has a similar position at the Milstead Mfg. Co., Milstead, Ga., succeeding Thomas J. Callaway, who has been made general sales director of the wiping waste division of Valley Mills, LaGrange, Ga.

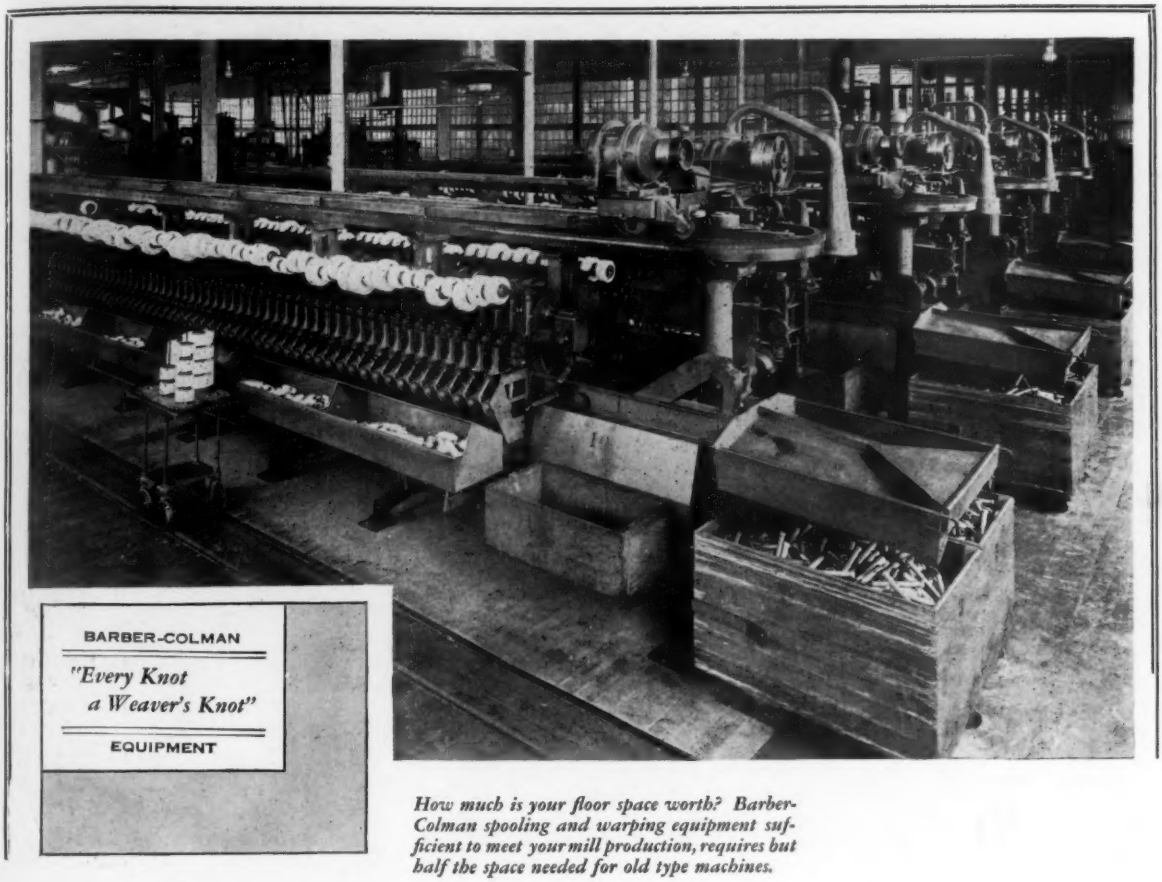
M. H. CARTER has resigned as overseer of spinning at the Pepperell Mfg. Co., Opelika, Ala., and has become overseer of spinning, spooling, warping and slashing at the Borden Mills, Kingsport, Tenn., succeeding C. W. Petit resigned.

S. H. LANDER, president of the Lad-Lassie Mills, Anderson, S. C., is president of the newly organized Gossett Dyeing and Finishing Company, Anderson, and E. P. Cofield, general manager of the Lad-Lassie Mills, has a similar position at the new dyeing concern.

P. L. WAGNER has resigned as superintendent of the Springstein Mills, Chester, S. C.

A. C. LINEBERGER, JR., is vice-president and general manager of the newly formed Thies Dyeing and Processing Company, Belmont, N. C., and C. M. Geer is secretary-treasurer. Mr. Lineberger is also secretary-treasurer of the Art Cloth Mills, Inc., Lowell, N. C., and Mr. Geer is vice-president and general manager of this concern.

W. W. SPLAWN has resigned as overseer of spinning at the Walhalla plant of the Victor-Monaghan Company, Walhalla, S. C., to accept a similar position at the Orr Cotton Mills, Anderson, S. C. He is succeeded at Walhalla by W. M. Bennett, from the Monaghan plant of the company.



How much is your floor space worth? Barber-Colman spooling and warping equipment sufficient to meet your mill production, requires but half the space needed for old type machines.

THE modern industrial buyer has learned the economy of using only the best and most efficient equipment. The *expense of mistaken economy* many times spells the difference between success and failure.

It isn't the first cost that counts. The big thing to watch for is the service—the continuous saving.

Use Barber-Colman Automatic Spoolers and High-Speed Warpers.

BARBER-COLMAN COMPANY

GENERAL OFFICES AND PLANT
ROCKFORD, ILLINOIS, U. S. A.

FRAMINGHAM, MASS. GREENVILLE, S. C.

Here's Another Good Spool Made by U S

THE FIBRE BOUND

Improved by time and tested by experience

Spools of this type made 25 years ago are still going strong. The heads are of wood, but the rims are bound by one-piece fibre bands shrunk on—and guaranteed to stay on.

If you feel that vulcanized fibre head spools are too expensive, try these. The cost is less than U S Vulcanized Fibre Head Spools, but more than Boynton Shield Spools.

In some respects these spools equal fibre head spools. For instance, there are no edge slivers to injure operatives' hands or break down ends.

An added advantage is that they have the same dimensions and thickness of heads as your regular spools, requiring no adjustment of traverse motion.

The only reason we stopped making these spools some years ago is that just previous to the war it became impossible to obtain the proper material for binding the heads. It wasn't because of any trouble with the spools—25 years in service and still going strong proves that.

The usual U S Guarantee of Satisfaction goes along with every order.

Write, Wire, or 'Phone

U S BOBBIN & SHUTTLE CO.

PROVIDENCE, R. I.

GREENVILLE. S. C.

HIGH POINT, N. C. PHILADELPHIA, PA. ATLANTA, GA.

BUILDERS OF BETTER BOBBINS, SPOOLS, AND SHUTTLES

AN OLD TIMER SAYS

In working with zest and giving his best,
Just for the pleasure of the giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

I see where "N. B. (Mass.)" and "O. O. (Pa.)" are taking me to task for an error in the production formula recently included on this page. I wish to thank these gentlemen for the correction. I certainly should have said Circumference instead of Diameter or else indicated that the diameter was to be multiplied by 3.1416. I only wish I did have some way to lay it onto that Blank Editor, but I will have to own up to the corn and say it was a mistake of mine.

It is interesting to note from the comments that "Old Timer's" articles are being carefully read, and I'm not sure but that it pays to let an error slip through once in a while just to see how many will check me up.

I am going to make the suggestion to any reader who did not catch the error but who did save the formulas that were printed on page 351 of February COTTON, that they turn to page 567 of April COTTON and read these two letters to which I refer and then change that formula so as to make it correct.

* * *

"Good will is the disposition of a pleased customer to return to the place where he has been well treated."

The above wording is taken from a decision handed down by the United States Supreme Court. That is the highest tribunal we have. Those words were agreed upon by a body of men who have been selected for their great knowledge of law, for their foresight, and for their fairness.

Will my brother overseers and superintendents please explain to me then why more of us do not profit by such a profound statement—a statement which is so easy to understand—a statement any of us can use in our every day work—a statement that would be worth more dollars to each one of us than any other one thing we could do.

Business men will tell you that there is no practical way to estimate in dollars just how valuable "Good Will" is to a firm or business. That same reasoning applies to every overseer and superintendent in the cotton mill business.

It matters not how much improvement is brought about in machinery—if improvement in machinery and management should get to such a high state of perfection that a spinner could attend 5000 spindles, a frame hand attend 20 speeders, a weaver run 200 looms, *we will still have human beings to manage.*

And just as long as we come in contact with human beings, there is going to be the element of "Good Will."

A business firm does not gain good will by selling customers goods and then not making them pay for them. A business firm does not gain good will by giving customers presents or something that they do not pay for or the handing out of special favors in any way.

Such a firm does gain good will by giving a good honest dollar's worth for the customer's dollar. It gains good will by being absolutely fair in its dealings; by showing no special favors to any one customer; by being accurate in its accounts; by being above all things what you would describe in an individual, a human being, as being a "Gentleman".

Say brother, isn't your career a business so far as you are concerned?

Isn't it a fact that you are an overseer or superintendent for what you can make out of it for yourself and family? Don't you have visions of making your business grow—grow to be a more successful overseer or superintendent?

Then why in common sense don't you make some effort to conduct your business of being an overseer or superintendent along the lines of building up that wonderful asset—that thing that the Supreme Court of these United States says is the most valuable asset any business can have—"Good Will".

Now be very careful that you do not misunderstand me—I do not say that you must not have discipline—good lord no. In fact the overseer or superintendent who does not know how to hold the respect of the people he comes in contact with cannot hold discipline and he will never, even if he should live to be a thousand years old, he will never be a big man.

As explained in the foregoing, business firms do not gain Good Will by being familiar with their customers, by doing them any special favors, etc. Neither will any overseer or superintendent get very far with that kind of management.

Work that brain of yours, brother—study successful business firms—successful men—

Be One!

* * *

If you realize that you have gotten up with a grouch of a morning, then let the second hand do the changing and placing of the help and you will be using good judgment.

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More business! *More* sales! *More* profits! More today than yesterday—this week than last—this year than the year before.

"*Sell* and Grow" is a great urge, but it is only half the truth. For *progress* in business is not just material increase. There is *growth* in reputation, the development of confidence and goodwill. Growth in the loyalty and efficiency of employees; in the enthusiasm and capacities of executives. A better product is growth; and so is the elimination of wasteful practises. Better Budgeting is growth—budgeting based on more competent analysis of the facts and figures of one's business.

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HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Desires Mill Layout.

EDITOR COTTON:

I would be glad to see the opinions of some of your readers as to the proper lay-out for a 25,000-spindle yarn mill divided equally in 50s warp and 70s filling, (12,500 spindles on warp and 12,500 spindles on filling), giving the number of breaker pickers, finisher pickers, cards, sliver lap machines, ribbon lap machines, combers, two-process drawing, slubbers, first intermediates, second intermediates, roving frames and jacks. I do not wish to run combers any more than 90 to 100 nips per minute.

I have had several arguments regarding an appropriate layout for a yarn mill of this size, and would appreciate receiving data covering the foregoing machines together with the weights of stock for them.

CONTRIBUTOR No. 2719.

Trouble in Sizing Ball Warps.

EDITOR COTTON:

Trouble in sizing white ball warps, while the colored warps come off all right, is reported by "N. W. (N. C.)". He says the white yarns take on slack after they get about five or six rounds on the dry cans.

As I understand his work, he is running colored and white work, and the colored warps are boiled and dyed through and through, causing an even shrinkage of each thread, whereas the sizing of the white warp is more on the surface, and it dries faster, losing its grip on the metal cans when they have made a few rounds, while the colored work grips the cans until nearly completed.

As an experiment in this connection, I suggest that he add some weight or tension to hold back to the white warps and see if he doesn't get some improvement. On a slasher I know yarns will creep if there is not a regular tension on the beams.

Another point he might investigate is to see if the balling head sets too close to the warper front. This will cause slack warps as the tension is not equal on all the threads. The heads should be set about 18 to 20 feet away from the delivery roll so that each thread will have about the same tension when it is wound on the ball.

It is a hard job to diagnose a case when you can't see the patient, but sometimes we can throw out a hint that will set a fellow thinking along the right lines.

O. T. (N. C.)

EDITOR COTTON:

Replying to your contributor who recently submitted a question on the ball warping machine, will say that the information given is very meagre. A balling machine may mean a Denn warper having from 1,000 ends up. In this event, these would have water bands tied on at short intervals. Then again, if they are made on a section long chain warper, up to say 500 ends, these ought to have a spiral wound string put on at the boiling box. So you see it is going to be kind of hard to make the proper suggestions for remedying this.

One suggestion—no matter how these warps are made—is this: The white warps ought to have one more run through the size, for the reason that the dyed warps absorb more size in two runs than the whites unless the whites were bleached.

Now if these white warps are not broken on the cans—just show slack places here and there—by splitting these in two parts and laying in at the beamer all across it will help. Just as one would do if it were three colors. On any kind of beaming, pieces of the same color should never be laid in side by side. They should always be scattered across the full width of the loom beam.

To get good beaming results from Denn warping, I have found from experience that when the ends reach 800 and up, they should be split. They have all the slack places evened up and beam faster; also produce nicer cloth.

I hope these few remarks will help our friend out of his trouble.

MACK (GA.)

Causes for Breaking Strength Varying in Identical Fabrics of Different Widths.

EDITOR COTTON:

I have heard the question of different breaking strengths of different widths of the same construction of goods discussed several times, and have made several tests on different widths of cloths by breaking the goods.

After reading the question of "Contributor No. 1045," we made another test. He said that with three widths, 72-inch, 81-inch, and 90-inch, of 60 sley, 56 pick goods, the 72-inch is stronger, warp way, than the wider cloths of the same fabric. After our test we all arrive at the same conclusion: First, that the breaking strength of the cloth can be kept more uniform with a friction let-off on the loom. That is, a rope or chain or strap let-off, than with a Bartlett or any gear let-off outside of the Bartlett Roper let-off, which has a loosening tension device that works from the beam as the warp gets smaller.

All weavers, I suppose, have noticed on broad work that it is more bother to keep their widths uniform or to the standard on a 72-inch loom than it is on a 90-inch or 99-inch. I am now talking of gear let-offs. Walk down a loom

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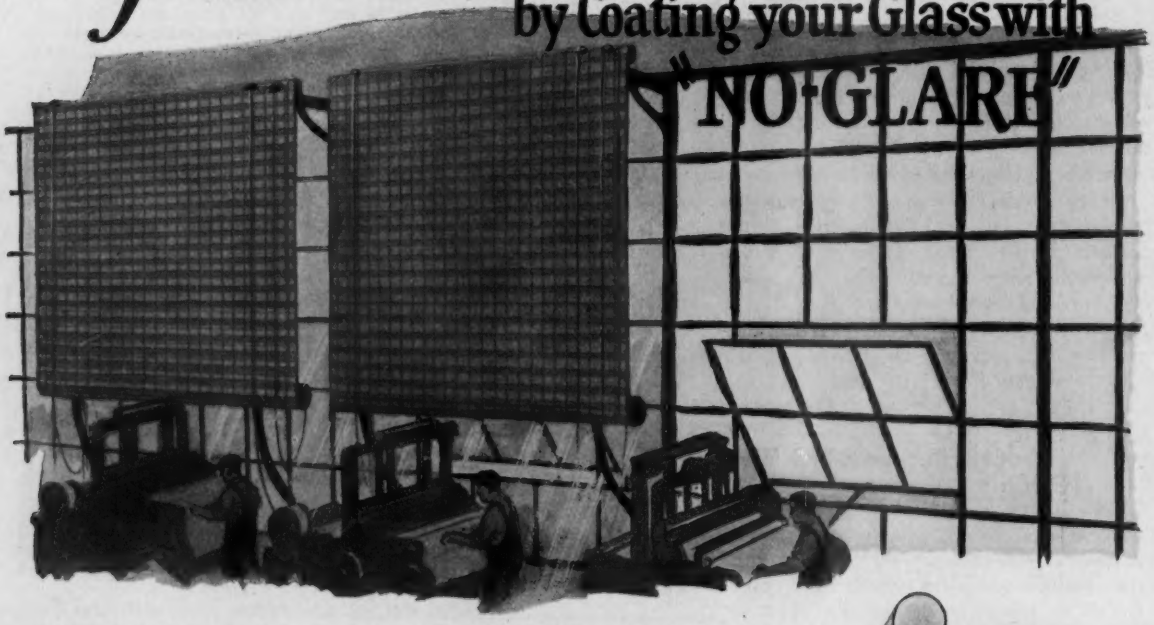

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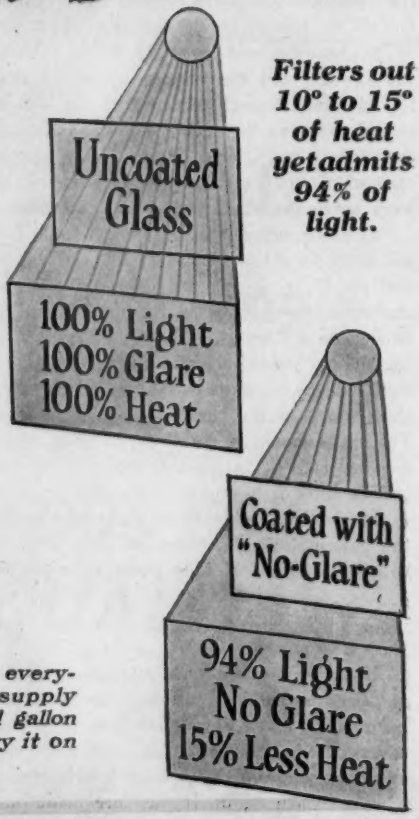

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alley and slide your hand over the face of the cloth to get the tension, and you will find the narrower the cloth the tighter the cloth, and of course that means a closer weave hugging the staple of the warp yarn, which will cause a stronger break.

I have tested the strength of several different widths and have found as high as five points difference between a 72-inch and a 90-inch. The 72-inch being five points stronger than the 90-inch, and the wider the cloth the weaker the break.

Here is a test that has been made on the same loom, a 90-inch loom running 90-inch wide, 68 sley, 64 pick, 22s warp yarn, 25s filling. A cut was run off this warp, then it was cut to 81-inch, same pick, sley, warp and filling yarn as the 90-inch, and a cut woven. Six tests were made from each cut. The 81-inch cloth had a three-point stronger break than the 90-inch cut.

Take a 40-inch loom, Bartlett gear let-off, and weave a cut, then turn it to a 36-inch cut and you will find that the 36-inch will have the stronger break.

The only solution that I and our men have arrived at is what I have mentioned before in this letter.

Another point in this connection is that any piece of cloth will have a stronger break in the center of the cloth than it does near the selvage as the reed chafes the yarn at the temple more than in the center, and also weaves slacker at the temple. I suggest that any "Doubting Thomases" test this out. PINE TREE STATE (MAINE).

EDITOR COTTON:

In answer to the question about different strengths in different widths of the same construction of cloth, asked by "Contributor No. 1045" in the March issue of COTTON, this could not be caused by any reason of the count or width. It is probably some local manufacturing condition, such as different tensions on the warp, or the drying condition on the slasher. If five pounds of steam are run on the ends required for the 72-inch goods, what does he use on the 81-inch and 90-inch widths. This is a matter of moisture content in the yarn when leaving the slasher. Also, are the 72-inch looms operated under the same relative humidity condition as are the other widths?

C. I. T. (S. C.)

EDITOR COTTON:

In reply to the question of "Contributor No. 1045" concerning breaking strength, will say:

These goods being made from the same warp, the same filling, slashed on the same slasher with the same size and woven in the same harness and reed, we can see no reason why there should be any difference in the breaking strength.

We have checked up on our cloth and find that there is no difference in the breaking strength of our narrow widths and our wider widths. Surely this trouble is due to some local condition in the particular mill, and the only chance that we see for such a happening would be due to the following:

Wider widths very probably mean more ends per beam (rather than more beams per set) increasing the weight of the beam. If the same amount of friction is used on the wide beams when racked up back of the slasher, as on the narrow beams, this friction plus the additional weight would mean that the warp yarn in the wider cloth would be subjected to a greater strain, which robs the yarn of its elasticity, in being pulled off the beam by the slasher, than would be the case in the narrow widths.

This is the only suggestion of which I can think for remedying the situation, and believe if the friction is let off slightly on the back beams, certainly enough to offset the additional weight, a solution of the problem may be found. CONTRIBUTOR NO. 520.

EDITOR COTTON:

I noted the question of your correspondent, "Contributor No. 1045," who asked in a recent issue of COTTON why it is that his 81 and 90-inch sheeting breaks weaker warp way than the 72-inch width of the identical fabric.

My idea on this is that there is not any one thing which would cause this, but several little things which would have a tendency to weaken the yarn on wide goods.

A wide loom requires a greater tension in order to get the same face and finish on the cloth as is secured on the narrower looms. Owing to this fact, some of the natural elasticity of the yarn is destroyed, and of course when this is done the cloth is made weaker.

In looking over the looms, and in feeling the cloth, the tension of course will seem practically the same, but it is nothing more than common sense, when you begin to think it through, that it will take more tension on the wide goods as stated, with the same face and finish and also to get away from bowed cloth.

I trust that this will be of help to your correspondent and others interested, and will look forward to hearing other opinions which your readers may send in on this problem. CONTRIBUTOR NO. 1046.

EDITOR COTTON:

I noted the question of "Contributor No. 1045" who is making cloth 72, 81 and 90 inches wide. He states that the pick, yarn, construction and size in all three widths are the same and yet the breaking strength is higher in the 72 inch width than in the wider cloths.

In my opinion, one of two things is causing this condition. First, I suspect that he is running his slashers faster on the 72-inch width than he is on the other two widths. Owing to the fewer number of ends in the warp, this would not dry his yarn as much possibly as the other two widths, which are probably run slower because of the greater number of ends.

If this is not his trouble, and if he is running his slasher the same speed on all three widths, then my opinion is that the 72-inch width is taking up more size than the other two widths, owing to the smaller number of ends, this extra sizing would show a greater breaking strength in the gray goods.

If neither of these suggestions covers his trouble I am at a loss to advise further. However, I believe he will find his trouble in one of these two causes, as we have had the same trouble on wide sheetings. F. B. (GA.)

EDITOR COTTON:

Please allow me space in the "How Other Men Manage" department, for an answer to "Contributor No. 1045", whose question "Why Does the Breaking Strength Vary", appears on page 454 of the March issue of COTTON.

I do not promise a solution of this trouble but will give an experience of my own, along the same line, with different widths of sheetings. This contributor says he uses the

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Experience

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same slasher and the same size, and in my opinion, there is his trouble. For example, the 90-inch goods contain a thousand ends more than the 72-inch goods, and I do not think one can properly size 5,000 ends with the same size and speed used on 4,000 ends, as the more ends, the less contact with the size; therefore, just a little might be added to the solution when making size for 90-inch or a wider width of goods.

I do not offer this as a positive correction of the difficulty, but only as an experiment. We run from 500 to 5,000 ends, and use a lot of variation in both speed and compounds.

E. L. (N. C.)

Carding Kinks.

EDITOR COTTON:

I have just finished reading several very interesting articles concerning cotton cards. As most of us know, or at least the majority of mill men claim, carding is one of the most important processes in cotton yarn preparation.

The work of the card is to remove all impurities which are of too light a nature to be removed by the action of the beaters, or to drop through the grid bars of the pickers, with the result that the impurities are carried forward with the cotton into the lap. Besides cleaning the cotton, it is the first step in the series of attenuation processes, which gradually reduce the weight of the cotton per unit of length sufficiently to form a thread. The lap from the picker is comparatively heavy and must be reduced considerably in weight at various machines in order to give the proper weight per unit of length in the yarn. The objects of carding are:

The disentangling of the fibers or the separation of bunches or tufts of fibers into individual fibers, and the commencement of their parallelization and the removal of the lighter impurities. In order to accomplish these objects the card must be kept at all times in first-class condition. The flats, cylinder and doffer wires, should be kept clean and have a good point on them at all times.

A common cause of dirty flats is the fault of the burnishing brush being set too deep into the wire of the flats. Sometimes when a card grinder happens to see dirty flats on his card, he will go to work and set his burnishing brush a little deeper into the wire. The result is, that the bristles of the brush will rub against the foundation of the wire and instead of taking the leaf, sand, etc., out it has more of a tendency to clog into the wire. A good remedy for this trouble, at least I have always had good results with it, is to reverse the flat brush, also to set it a little deeper into the wire of the flats, which brings all the impurities to the surface. Put on the burnishing brush, setting the point of the wire to about the knee of the wire of the flats. When the flats have been around about twice, grind them lightly.

Grinding Cards.

Previous to the grinding of a card, it should be examined, to find out as to whether it needs repairs, such as replacing of broken parts with new ones, etc. The flats should be perfectly clean. The sides of the cards, the under screens and the clothing on the cylinder should also be examined to make sure there is no wire raised or backed under. If the wire is found to be raised at all, the card should be redrawn. This work should be done by an experienced man, care should be taken that the clothing does not come too close to the edge of the cylinder, which causes the cotton to roll up and at times come through in the selvage of the sliver, making dirty and unevan work. If the card is taken down to be reset, the screens and mote knives should be cleaned. The screens should also be tried as to whether there are any high places in them. A good way to try these is to use a mote knife as a straight edge. The licker-in should also be taken care of at this time. Damaged wire will cause all kinds of trouble, such as lumps of matted cotton coming through, which results in uneven sliver.

There has been plenty of discussion regarding the straight and progressive setting of card flats. Some prefer one and some the other. The straight setting, in my opinion, is the best and only method. I have tried both, and have taken tests on cards set different ways and have found that the straight setting is the best of all. Each flat is expected to do exactly the same amount of work. Therefore, if we set the flats farther away at the back, I don't see how it is possible for them to do the same amount of work as those flats which are set 2/1000 or more, closer to the cylinder. We know there are certain amounts of fibers carried around by the cylinder several times before being delivered to the doffer which, in my opinion, would be taken around several more times when the progressive setting is used.

Some card men argue that there are less chances of the wire of the cylinder and flats getting damaged when a bunch goes through. Most of these men who use the progressive settings do not vary them more than 4/1000 from the back setting point to the front setting point, which in my opinion is not worth while considering. Regarding bunches going through, if there were a difference of about 22/1000 or 34/1000, there might be some chance for a debate. Most card men, with whom I have come in contact, favor the straight settings.

Cloudy Webs.

There are many causes for cloudy webs, some of which I will try to explain. Irregular stripping, inaccurate settings of the flats, doffer, mote knives, screens and licker-in. Also, heavy grinding of the flats, cylinder and doffer wire; broken or dull wire on the licker-in. The accumulation of cotton is most always caused through dirty screens, or they may be rusty and rough. If this is the case, they should be taken out and given a thorough cleaning with emery paper—very fine preferred—then polished with black lead and afterwards rubbed well with whiting to eliminate any chance of the fibers getting dirty when they come in contact with the parts that have been cleaned. I have come in contact with many grinders who have run into this trouble when the cotton has been clinging to the lip of the front cylinder screen, for instance, and in order to rectify this trouble, they use the method of reversing the doffer to remove the cotton which has collected on the lip of the cylinder screen. This, according to my idea, is a very drastic method. There have been many cards which had to be redrawn, because of this dangerous practice. The best way is the safest, and I should say that the one in charge should see that this is done in the right way.

As I said before, the screens should be taken out and cleaned thoroughly and polished, which will save a lot of labor, and also expense. Reversing the doffer only elimi-

nates the trouble for a very short time.

Low hanging webs are nearly always caused by low humidity and from the comb being set too low.

Web Following the Doffer.

This trouble is practically always the result of the comb not being set close enough to the doffer, or being set too high. A slack comb band will cause this trouble at times, or when a lap has run out and a new one has been put in. Previous to the new one being put in there is a certain amount of fiber that will follow the doffer. The new lap is put in, and naturally the cotton being just fed in will follow the fibers that are going around with the doffer, and in many cases the whole web is following the doffer, and if allowed to run any length of time will choke the doffer and cylinder up to such an extent that there will be millions of neps made. Consequently, the card has to be stripped out and the flats run bare before the card is producing good work again, and nine times out of ten the production of the card is lost for an hour or so.

Just a few words here concerning raised fillet. There are some men who, when they come in contact with this trouble will resort to the old method of hammering the raised spot down with a hammer and a piece of clothing,. which I think is a very drastic method. In nine cases out of ten the clothing will raise or back under very shortly after the cotton is fed through the card, providing the card is set the way it should be.

Considering the time that is lost in grinding the card, the wire, the cleaning, and the production, I don't think it is worth while for what little it will cost not to have the card redrawn. It saves the card grinder a whole lot of trouble. He can set the card more accurately than he could ever dare to in case the wire has been knocked down and will be able to produce the quality of work that is required of him.

A grinder who has two or three cards on which the clothing is raised, and has to go over them with the hammer and a piece of fillet, has his hands full. As I have said before, the only method of straightening it out is to redraw.

Card Clothing.

The clothing of the various parts of the card is a very important process and the work should be done in the best possible manner, by the aid of the most improved appliances, if the card is to play its part in making reliable, finished yarns. The manner in which card clothing is applied has a direct and lasting influence upon the quality of the carding produced. Carelessness in putting on the clothing is certain to produce very bad results, such as cloudy web, uneven matted slivers, nep and broken selvages. Also slivers which refuse to satisfactorily part with the short fiber at the comber, or will not permit their fibers to slide over each other at the drawing frame so that they will be parallel with each other, thus making it impossible for the slivers to be drawn by draft rollers into rovings and yarns at the succeeding machines.

It is always essential that the card clothing shall be so applied that there is no tendency for it to slip or blister when once applied, but will give an unvarying surface of wire teeth to insure accurate settings, which in turn will help the wire teeth to give satisfactory treatment to the fibers.

There has been considerable discussion in COTTON these last few months in regard to the setting of cards by loose and tight gauges. I have never tried this method, and I hardly think I shall. I quite agree with "J. N. C. (Mass.)" when he says, in substance, in a recent article, that these fellows who use the loose and tight method should throw away their gauges or sell them, for they are no earthly use to them. I have come in contact with many card men who have used the tight gauge method. In many instances I have been around when a card grinder has been asked to what gauge he had set the flats and his answer would be "A tight 10/1000," and when he came to turn his cylinder in order to see if his flats were clear of the cylinder, the latter would not budge at all, one way or the other.

If setting to a 7/1000 or a 10/1000, set to that particular gauge. Some card men use two gauges. I do not like the idea myself, neither do I use the method, but I do think it would help some of these fellows who like the tight gauge stuff. For instance, if a grinder is setting his flats to a so-called 10/1000, he ought to try a 7/1000 gauge to make sure that the flats are clear. There are many cards which have had to be redrawn on account of this tight gauge setting. That is one of the main reasons why I have never favored the Idea. I do believe in close settings, but there is a whole lot of difference in the two, especially in the setting of the flats, it is too risky to set them to a "tight" gauge. We all know that there are no two men who have the same sense of touch, and I think one of the biggest jobs I ever had was to break a man in on setting a card, especially the flats. In order to have him set them accurately, he must be watched and his settings checked up continuously for months in order to make a good grinder out of him. But it is well worth the trouble when you have got him to understand the different settings without using two gauges where one would be all that was necessary, and he can go to work and start the card up without being nervous about it.

Of course there are times when there are high flats in a set, but it does not take a good grinder long to find them and straighten them out. This is where a flat grinding machine comes in. In my opinion, any mill that has a great amount of cards ought to have one. They are well worth the price.

A few months ago one of our readers said that a card grinder could be made over night. This may be true, but I for one have never seen this accomplished and I feel pretty sure that I am not the only one. I myself, have broken in plenty of card grinders in my short experience in the mill, but never yet have I accomplished it in such a short time as that. Of course it must be a gift with some fellows who can teach others and make them understand so quickly. We know there are lots of mills where these grinders who were made over night *might* hold their jobs jobs a life time, but then again, there are mills where they could consider themselves lucky if they held their jobs over night—*the length of time it had taken them to learn.* I should hate to have charge of a good size card job with a bunch of grinders who had been taught their job over night, and there are very few overseers or superintendents who would want many of them, if they want to produce a good quality of work.

In the September issue I note there was some comment on the vacuum stripping again, in which "Jock (Mass.)" in his article said that he would not condemn either of the systems, and also said that, "It is mighty hard for some of the old timers who have been using the brush since they

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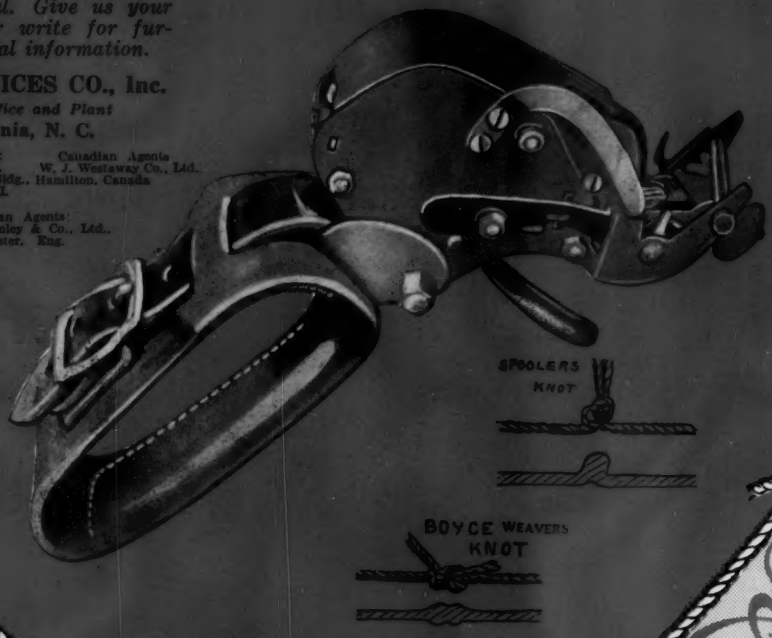

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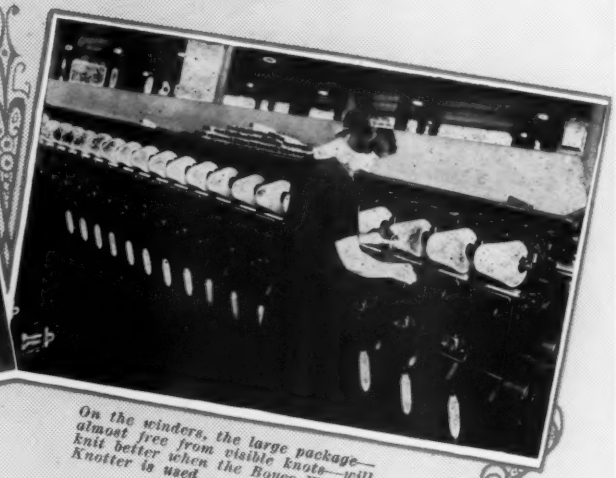

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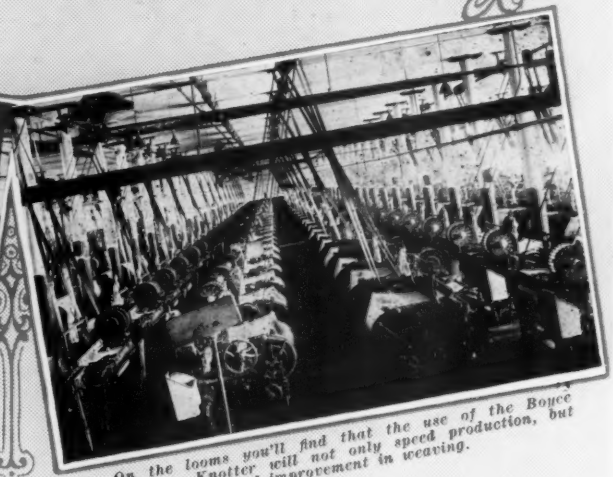

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went to work. They cannot see how the brush can ever be discarded, but as I stated, the vacuum system is here to stay and they cannot stop progress." I guess "Jock" is right. As far as that goes, I myself, do not think that the brush will ever be discarded until we are able to produce more vacuum than we can at the present day. I might say that the best vacuum system on the market today is equipped with a stripping brush attachment, so if the vacuum system will do all that some of our readers claim it will, why use the brush? As I have said before, it is impossible for the vacuum to take out the waste and other substances found in cotton. I am not condemning this system by any means. Any mill man must admit that it is a great system. It is more sanitary and easier to handle than the brush system. But I would *never* discard the brush until we can get enough vacuum to take out the leaf and seeds and waste, etc., found on the wire of the clothing after using the vacuum system itself. As "Jock" said in his article, it is still in its infancy, and like a whole lot of other attachments, time will tell.

Take for instance the continuous stripper, which is new on the market. This, no doubt, is well worth watching, and I think, far ahead of the vacuum as I have seen it. Of course there are several points about it that need consideration; one especially. That is, will it do something which we do not want it to do? It certainly will do all that is claimed for it by the manufacturers. Are those needles on the rotor going to hurt the wire of the cylinder? I do not think so. Of course again time will tell. Then the question comes up, how long should we wait before we determine as to whether it would be wise to have twenty, or any other number of cards, equipped with this device. There is one of these in the mill where I am working at the present time. I have examined the wire on the cylinder several times, and I find it is just as good as it was the day the device was put on.

Some card men seem to think it will not help the breaking strength of the yarn. This is another point to be thrashed out. There is a considerable number of mill men who seem to think that the traversing movement of the needles has a tendency to hurt the fibers of the cotton, but I cannot see how they can. In other words, I think that these needles are too flexible to hurt the fibers.

I should like for some of the readers of COTTON to express their opinion on this subject. I understand that quite a number of them are being installed in different mills in the country. T. A. B. (Mass.)

Overcoming Mispicks.

EDITOR COTTON:

In answer to "Contributor No. 469," whose query appears in the February number of COTTON, under the heading: "Which Quills Makes the Mispicks?", I presume this writer means by "quill" the bobbin, and also means Draper looms, as he says: "full quill that is going in the shuttle." This, I assume, means being transferred from the battery to the shuttle.

Half-mispicks can be caused by the last of the filling running off the bobbin when the shuttle is going from the fork side of the loom to the battery side through there not being enough yarn to reach the whole width of the cloth. This will be the outgoing bobbin.

One remedy would be to have a bunch builder on the spinning frames, if there is not one already, so that there will always be a little yarn left on the bobbin. Another remedy will be to set the bobbin feeler on the loom so that more yarn will be left on the bottom of the bobbin when the transfer to the full bobbin is made.

Another cause of half-mispicks is by the transfer forcing the tip of the bobbin too far through the shuttle, thus causing the filling thread which is wound around the end of the battery to break.

Still another cause of half-mispicks is made by the one who puts the bobbins in the battery putting in a bobbin which is only half full and not winding enough yarn around the tip of the bobbin, which will unwind when the bobbin is being transferred from the battery to the shuttle.

J. L. (MASS.)

What is an Average for Seconds on Osnaburgs?

EDITOR COTTON:

I have a proposition before me which I am trying to clear up, and I would be glad if some one, or more, would give me their understanding through the "How Other Men Manage" department of COTTON.

What per cent of seconds or shorts is permissible in weaving osnaburgs made from low grade cottons, using about a Strict Good Ordinary mixing; 30-inch to 40-inch; counts, warp 40 to 26, filling 20 to 32; yarn numbers from 4.50s to 12s standard to soft spun.

I am wondering if we are getting too many seconds compared with other mills on this class of work, and I shall be greatly pleased to have information from as many mills as possible, in order to get an average.

CONTRIBUTOR NO. 603.

Little Things.

EDITOR COTTON:

I would like to follow through the mill some of the little things that are often overlooked, which will cause any department to get away from a good organization and discipline.

As we all know to produce good card sliver the lap must be in good shape. But what causes bad selvages on the picker laps? Frequently it is a badly distributed fan draft, or the circle leathers not fitting out over the ends of the screens, or the machines not being properly cleaned around the beater boxes on the ends of the beaters, or an accumulation of oil and dirt on the ends of the mote grid bars causing them to become stopped up and catch bunches of cotton and accumulation at each end of the beater.

This also causes a bad fan draft because the grids have a spacing between each bar for the motes to be knocked through, and the fans have to pull the air current through the cages and place the cotton at the same time, and when this space is stopped up, it also cuts off a part of the evening effect of laying the cotton on the cages; besides, it takes the motes at those places that have clogged up between the bars and puts them onto the cage, and the card must take them out or grind them into many smaller pieces and pass them on to the drawing.

Besides, with a poor selvage on the lap we have a thin selvage that is easily broken or will sag down on the cards, and sometimes cause singling to go on into the coiler, and the card hand will come along and rake it over onto the

half that is going into the can and pick up the balance and throw it into a waste can to go back to the picker and undergo this severe strain of beating again.

It doesn't stop here. We have "old Bill" on the drawing frames, and we use "old Bill" on the drawingframes because this old drawing frame job won't pay as much as some other jobs, and nobody wants it, and we just put him on there and get by with it. When this card sliver hits "Bill's" frames he knows nobody wants his job, and all he thinks of is to get through, so here she goes. The spoons may not knock off properly to stop the frame in time to allow enough sticking out behind the feed roll to piece onto properly, and if he kicks to the drawing frame fixer too much he gets cussed out by him, so he just looks for payday and quitting time day in and day out.

It doesn't stop here. That piece of singling and that bad selvage from the card and picker begin to play havoc, because it is one of the "little things" that don't "amount to much". Also those motes which we saw passed onto the screens, caused from stopped-up mote bars, have now hit the metallic drawing rolls and are mashed up in the flutes, causing lapped up rollers and the sliver to be broken and pieced, and have let some cut drawing get by that "Bill" didn't see while he had his big jack-knife out cutting that lap off of the roller on the other frame. So that directly or sooner that same roller, off of which "Bill" cut the lap is lapped up again.

Now what's the matter? "Bill" has too many laps; his frames are continually lapping up. Oh, I know now. He let his knife cut a small burr on the roller, and now the fixer has a job, so by and by "Bill" stays out and becomes disheartened. Bill is but human. Do you blame him?

Now they begin to speed up the drawing, it runs so badly and is stopped all the time, it won't keep up—so here we go with all those thick and thin places, and light and heavy work, and singlings. Poor old Bill comes in next morning, the boss looks around to see if he is in. "Yes, Bill's here. We are good for that drawing today; he will catch it up." So here we go, looking after bigger things than the picker room and the drawing.

"Yes, Bill's in, so we'll catch that drawing up today." When the waste has been taken back to the picker room to be re-worked, it still makes bad matters worse. The slubbers now have a lot of ends breaking, caused from this over-worked cotton and bad splicing and bad selvages from the cards and pickers. The size shows a great variation, and is perhaps too light, so here we go and change the draft to catch it.

By this time the picker man has begun losing too many laps and is letting the weights get away, and here is a lap that lacks just ¼ pound, and the boss isn't there, so he lets this one go as the cards are nearly up with him. The next one gets on the light side about ⅛-pound and, well, this is so close that she goes through, too. If the boss were to come in and see all of those laps set back, then what? So the picker room man begins to put on the apron from one to two of the laps set back and tries to run them up to get rid of them. The evener begins not to function properly, and here we have another lap to go back for reworking. We keep on beating the life out of the cotton and breaking it to pieces, causing it to make fly and weak, light yarn that causes trouble.

"Well, here I am and the boss can't see me from his desk. I am out here in the picker room off to myself, just praying and hoping the boss doesn't come in and have me weigh those laps over." That's what the picker room man is thinking. Now, the day is gone and the card hands have those laps on and the boss won't find them.

Tomorrow comes and the slubbers are running bad anyway. The humidity got away somewhat, and the tension has to be changed to catch and take up those light slack ends, and so it goes on for days.

The intermediates get to going bad, and the help gets to laying out. Little things get to be bigger things, and the picker room and drawing were such small things! By and by the boss spinner is raising a howl, and the weaver begins to kick, and it is getting somewhat serious. The cloth is not up to standard. The overseers are called to the office for a discussion and taken over to the cloth room to look over some cloth. Each fellow is brewing over the trouble, and all are sore, and next day begin to look for some big thing.

Yes, Bill's here, and the picker men are here. Now to find the trouble. Well, the work is not running good, the rolls need oiling and the clearers need picking, and the machines in general need a general cleaning up. Every hand has been over-taxed so they haven't had time to clean up the machines properly. The second hand gets orders to have a cleaning up, so he gives orders around and Sam and Henry just quit, the work is so hard on them and they decide to try another mill.

What caused it? Those bigger things we have been talking about? Oh, no. It was just those little things which are passed over every day. Not only in the card room but in every department. I once knew of a job that ran several different numbers. Naturally each number had its travelers put around in the traveler cups for the spinners, and maybe the travelers had been neglected and allowed to run too long, and would wear out and fly off the ring, and if the section man didn't have travelers in the traveler cups, some of the spinners would get travelers from another frame. Naturally the travelers became mixed all over the room and the work was rotten. What caused it? A traveler. A mighty little thing.

I remember another mill with a varietion in the weight of the cloth. It was found the weavers had been going around and kicking the let-off to gain cuts. What was it caused this big howl? The little ratchet on the loom.

Well, what are we going to do? Run the bosses all off? I should say not. I am writing this, not because the overseers don't know all this—they all know it—but because it might help somebody who is just drifting and check him back. But those drawing frames and pickers are not fool proof, they depend upon human skill, and are two of the most important places to fill outside of card grinding and oiling. I believe every overseer will agree with me, if he could pay as much for these jobs as he does for a good frame hand, he would improve his work wonderfully.

L. J. (ALA.)

Drafting on Cards.

EDITOR COTTON:

I note in the March number where "R. N. (N. C,)" would like to know about long draft carding, in answer to which question I will say, it is my opinion and experi-

ence that the card draft should be kept below 100 to get the least variation in the finished yarn.

Is it not reasonable to assume that any variations in a heavy lap will be correspondingly greater than in a light lap? Added to this is the fact that this variation has magnified still more the excess draft needed to draft out this heavier lap.

Also, with a heavy lap, there is more danger from licker-in damage to the staple, for the heavy lap allows a more continued action on the cotton before the feed roll actually turns it loose. However, there are those who will argue to the point that this will produce a better combing action by the licker-in.

As far as the actual work done on the card is concerned, I do not believe that it affects the card at all. For we really have the same amount of cotton going through the card whether we use a light lap and a short draft or a heavy lap with a long draft. The only difference that might be found is in the variation of finished sliver and in the combing action of the licker-in, which is likely to do some injury to the staple.

So my advice would be for the inquirer to use the 12-ounce lap with a draft of 117, rather than the 16-ounce lap and a draft of 140. J. R. W. (N. C.)

EDITOR COTTON:

It is a pleasure to give "R. N. (N. C.)" all the help I possibly can on his problem of card drafting.

If his cotton is of a low grade, I would advise using a lap of about 15 ounces for his 52-grain sliver. This weight, after considering the waste of about 7 per cent, will call for a draft of 120, approximately.

My reason for advocating a heavy lap is that the feed roll will then run more slowly, giving the licker-in every opportunity to remove as much of the sand, leaf, dirt, etc., as possible. This prevents undue filling up of the cylinder and flat clothing, and also produces a cleaner web.

The licker-in should be run about 450 r.p.m. on low grade cotton, and 425 r.p.m. on cleaner cotton.

If the stock is clean, then a lighter lap of 12 to 13 ounces, with a draft of about 100, is to be preferred, because the stock does not need the action of the licker-in so much, and the shorter draft will give a better break. The same holds true on picking equipment also. On dirty cotton, heavier laps should be fed, with slow-moving feed rolls.

Under no conditions should "R. N." be persuaded to run a draft of 140 on his cards. It is too high. C. C. (N. J.)

EDITOR COTTON:

"R. N. (N. C.)" wants to know which is the better layout for cards, a 12-ounce lap with short draft, say about 117 or a 16-ounce lap with a draft of 140—finished sliver to weigh 52 grains.

(1) Let me give "R.N." a pointer on carding that holds good for all classes of work, which is: that the more rapidly the work can be got from the card consistent with the quality or grade of work required, the stronger will be the yarn.

Foreign matter can be extracted more easily from a thin sheet of lap.

Let us first consider what takes place between the feed roll or bite of the feed plate to the cylinder. In case of a 16-ounce lap with a draft of 140, we have a hanging fringe of fibers that are exposed to the licker-in teeth for one-quarter period of time longer than in the case of a 12-ounce lap with a draft of 117.

To illustrate this point, it may be mentioned that waste is created by the severe treatment to the fibers. Picture in your mind, if you can, the spiral action of the licker-in teeth upon a heavy sheet of lap. Its surface velocity is about 1000 feet per minute, therefore, the same tooth will strike the same fibers many times before one inch of lap is delivered. Hence the injury to the fibers.

Remember, it is much easier to extract foreign matter from a few fibers than from a bulk. In other words, the more bulk the lap or sliver, the weaker the roving or yarn.

Do you recall when we had 18-ounce laps with a carding sliver of 85 grains to the yard? Those days are gone forever, and why? The foregoing is the reason. The bulkier the lap, sliver or roving, the more seed and dirt on the roller beam throughout the mill. Did you ever hear of a fine goods mill running a 16-ounce lap? Why? Because the length of the stock used in fine goods mills is long, which proves that when long drafts are employed the machine parts are already overworked, and the two extremes are too much. So, to make yarn that is uniform and strong, we must begin with a light sliver and remove the possibility of overworking the parts, so that they can do their work properly.

The best way to do in testing the merits between the drafts given by "R. N. (N. C.)" is to run a test bale of cotton through, one half making a 16-ounce lap with a draft of 140, and one half making a 12-ounce lap with a draft of 117. If this test is made, I am sure that the long draft question will be settled when the yarns from each are broken.

By the way, you never hear of the long draft boys now. There is a reason. Seed and dirt should be extracted in the picking or carding, and not by the drawing rolls.

WASH (R. I.)

EDITOR COTTON:

In reply to the question regarding card drafts, asked by our friend "R. N, (N. C.)," namely, which is the better layout for cards, a 12-ounce lap with short draft, about 117, or a 16-ounce lap with a draft of 140 finished sliver to weigh 52 grains, I will say that I favor the 12-ounce lap with the short draft, though I have no information regarding the grade of stock "R. N." is using, but I take it that he is using a good grade.

However, I wish to point out something I notice in "R. N.'s" question, namely, the weight of the sliver—card sliver I think he means—which to me seems not quite right, as by a little calculation I find that with the drafts and weights of the lap mentioned that the weight of the card sliver is not correct.

Taking one method of finding draft by comparing the weights of equal lengths of cotton fed and delivered, we get in this instance weight of one yard of lap 12 ounces, or 5250 grains. Therefore 5250 ÷ 52 grains give us 109.6 of a draft, that being of course theoretical draft from which we must deduct, say 5 per cent allowance for waste. Hence: $109.6 \times .95 = 104 =$ draft.

Of course "R. N." may have obtained the mechanical draft, which is likely to give more accuracy, but having only the respective weights on hand and figuring these as in the foregoing, I imagine he is a little way off the mark

regarding the amount of draft he is employing on his cards. However, we know that draft means the attenuation or lengthening of cotton passing through various machines, and I believe that the thinner the cotton is fed to a card the more even attenuation of the fibers will it permit. This of course is a well proven fact when it is passing through a set of rolls.

I mention the foregoing in order to point out the fact that we have in addition to the total draft of a card, also the intermediate drafts, which I think are something of a mystery to some card men.

These drafts are between (1) the feed and cap rolls; (2) the licker-in and feed roll, and (3) the licker-in and cylinder; also between the doffer and calender.

No draft whatever exists between the cylinder and doffer, but there is only a condensation of fibers at this point, though this to my mind is very important, and is one reason why I favor the 12-ounce lap instead of the 16-ounce, because one intermediate draft will be always the same, namely, between licker-in and cylinder. When using a 16-ounce lap, which will have a larger cross-section of fibers than the 12-ounce, there are bound to be more fibers between the latter points at one time than with the thinner lap, hence a greater condensation or doubling over of fibers between the doffer and cylinder, which is detrimental to the draft being evenly executed.

Again, a 12-ounce lap ought to be in a cleaner condition than a heavier lap on being fed to the card, thus enabling the card to accomplish its function better, the result being a cleaner sliver, the latter being of course the most important object of carding. We run a 12-ounce lap to produce a 12-hank roving made on jack frames, or a 13-ounce or slightly under from a lower grade of stock, and I think "R. N." will do well to hang on to the 12-ounce lap with a short draft, and he ought to cut out long drafting at the cards and try it after a few doublings where the sliver will always yield to drafting, to a limit, providing it has received the proper treatment in the card.

In reference to the intermediate drafts I mentioned, I may say that these are obtained by comparing the surface speed of the organs mentioned. For instance, we may find that a lap roll has a surface speed of say 9.3 inches and the feed roll a surface speed of 10.5 inches, thereby using the rule, namely, dividing the surface speed of any delivery part by that of any part which precedes it or which feeds it, we get:

Surface speed of feed roll divided by surface speed of the lap roll, thus, in this case:

$$\frac{10.5}{9.3} = 1.1 \text{ draft between lap and feed rolls.}$$

This of course applies to the other points.

In most cases we have a draft between the licker-in and cylinder of 2 to 2.5, between the licker-in and feed roll about 1225 of a draft. The principal draft exists between the feed roll and the doffer, and this is the draft that is altered when the draft gear is changed.

Now I am hoping I have given a little light on this subject, which is a very interesting one, and I trust "R. N." will see what I have been driving at to convince him of my belief.

D. E. (R. I.)

EDITOR COTTON:

The draft on cards has become quite a perplexing problem in manufacturers' minds of late years, and we find considerable controversy over the lengths required to properly card different weights of lap per yard. This is evidenced by the question from "R.N. (N. C.)" which you published in the March issue of COTTON.

We, as a whole, are more or less governed by the way our instructors channeled our minds in the earlier days of instruction. Many have never dared to vary from the old method of "Never go beyond that," fearing a reverse outcome from the results already in process. When the thinker has the opportunity to test the principles underlying these new departures, it is then that great strides are taken toward the golden fundamenals of yarn manufacturing.

I might as well state here that a great many men enter these tests with a view of strengthening their yarns, and lay every little gain or loss of strength in the test to the experiment in question, when as a matter of fact the same gain or loss of strength in many cases would have shown itself had there been no experiment at all, for the loss or gain would be in the fibers and not the re-arranging of a setting or a weight or a draft.

I hope that in his experiments to determine whether long or short draft is better for him, "R. N." won't jump at conclusions too quickly and say there must be some experiments that show a decided change for the better or worse, for I agree with him in the foregoing to a certain extent. For instance, if we could use the same strand of yarn or roving more than once to determine the loss or gain in an experiment, it would be fair to say the experiment shows a decided loss or gain, but because we have to use another strand of cotton, other than the one we first experiment with, shows that a test isn't conclusive in every sense of the word, for the second lot may or may not have stronger or weaker fibers in it, and that alone puts us all at sea as to whether the experiment was a success or a failure.

Again, I know that in many re-arrangements of drafts, weights and settings, many and many improvements have been made, also many failures have been laid bare, so we must go on and test out the different conditions that others have suggested to determine whether we will adopt or reject these new ideas. These principles I speak of in replying to "R. N.'s" question of lay-outs for card drafts to help him in settling on the general principles derived from any experiment, especially that of long or short card drafts.

In working out the principles of long draft, one can't simply go to a card and change the draft gear and expect to reap a harvest of good work from such a change, for in my opinion there isn't any change that one can get improved results from (whether long or short drafts, it makes no difference) unless he is positive that the opening and picking is in perfect condition before the changes are made at the card. In order to run long draft successfully the cotton must be opened, if possible, in fiber form, positively free from congestion of fibers in lump form, for lumps in cotton, after the cotton leaves the openers, are the direct cause of poor, uneven yarn. For instance, if the opener picker is so arranged as to allow thick tufts of cotton to pass on without being opened into soft fluffy fibers, those tufts while passing through between the feed rolls hold the rolls open at that point, and immediately next to the tuft there is a thin portion that jumps, so to speak, when the beater strikes it, and passes on to the cage without be-

ing properly beaten. At the same time the tuft moves the eveners which in turn moves the cone belt on the cones to take care of the heavy portion under the rolls, and disturbs the evenness of the weight per yard of lap. If he would run any conceivable draft, he should first make the web of the lap even by wholly removing the thin and thick places.

When the evenness of web is assured, then he can take up his problem of card draft. There are so many things that can be said in favor of long draft on cards that I hardly know how to picture them all. First, the fact of having a picker lap of even texture per yard will assure a man of better running yarn because it is even. Now take this even lap and place it on the card and start it through beneath the feed roll, and if care is exercised in the experiment, it will be found that the weights holding the feed roll upon the surface of the feed plate stand perfectly still while the weights on other cards, whether they are arranged for long or short draft, will move up and down. This steadiness, shown by the weighted levers, proves that every particle of the web is going to be held to the very last before being released by the revolution of the roll, and carded to its full extent before it is allowed to pass over the licker-in screen to the cylinder. It will also be noticed that these fibers as presented to the licker-in, when allowed to be released by a short draft, are not in contact with the licker-in surface as long as they are under the long draft system, and this fact alone proves that it is impossible to to clean the web at the nose of the feed plate as well with short draft as it is when the tuft of lap is held for a longer duration under the long draft system.

The next advantage of the long draft over the short draft is that while the feed roll revolves at a much slower rate under long draft than it does under short draft, it prevents what I term plucking, as the slow feed allows the licker-in to pick the fibers from the tuft of lap, and upon examination of the short draft card there will be found a small white flake having the appearance of a staple pulled by hand, scattered over the face of the cylinder. These being thicker than the bulk of cotton on the cylinder, are very hard to dispose of and will show in many cases in the web. A 16-ounce lap has its advantages over a thinner web, namely, it is of a texture that allows the feed roll to hold securely fibers pressing against fibers, holding one another until picked out of the tuft of lap by the licker-in after being thoroughly cleaned, while the thinner lap has a tendency to allow the feed roll to operate too close to the feed plate eliminating the cushion which is so essential to this particular case for good carding. The longer the draft the more dirt is struck from the fibers at the feed plate; this alone would warrant the installation for when the sand and foreign substances have been removed by the heavy wire of the licker-in, the finer wire on the cylinder and flats hold their fine ground points for a longer duration than would be possible under adverse conditions found in the use of short drafts.

The question of "R. N." restricts us. He asks which is better for a 52-grain sliver, a 12-ounce lap with 117 draft, or a 16-ounce lap with 140 draft. Of course, there is nothing said about the percentage of waste desired, so I assume that the question is just a random shot at the principle involved, so in answering the question directly I would say the 140 draft would be more to his advantage, provided he attended to the other important things preceding the carding operation. For, together with the extra preparation that takes place at the feed roll on a long draft card, there is a more uniform sliver with more elasticity, with perhaps more or less breaking strength—which is determined wholly by strength of the fibers themselves—an easier sliver to operate, a cleaner sliver, and a card that stays sharp longer.

There is a question that always exists in my mind. Why, when men use long draft on cards, don't they use a draft that is long? For years my drafts have been 215 inches in length. We never hear of a complaint on dirty yarn, and compalints of sizing are extinct. TOM (MASS.)

EDITOR COTTON:

In reply to the question of "R. N. (N. C.)" as to which is the better layout for cards, a 12-ounce lap with short draft, say about 117, or a 16-ounce lap with a draft of 140—finished sliver to weigh 52 grains.

In the past we have made several tests on cards with drafts from 90 to 140. By following the tests very carefully process by process, we observed that with a draft around 120 our work was cleaner and breaking strength better.

We believe that a 12-ounce lap will give best results as it will be more uniform throughout. A lap that is very heavy can cover up the holes caused by the air current in the picker. It will look to be all right while running on the card, but when run off before the light, the unevenness can be detected. The same will occur when the lap is too light. But with a 12-ounce lap the air currents of the picker will function more perfectly, and a more uniform lap will result. Therefore, we would suggest that "R. N. (N. C.)" use a 12-ounce lap in his mill and we feel that he will get the best results. H. E. (N. C.)

Settings for Draper Looms.

EDITOR COTTON:

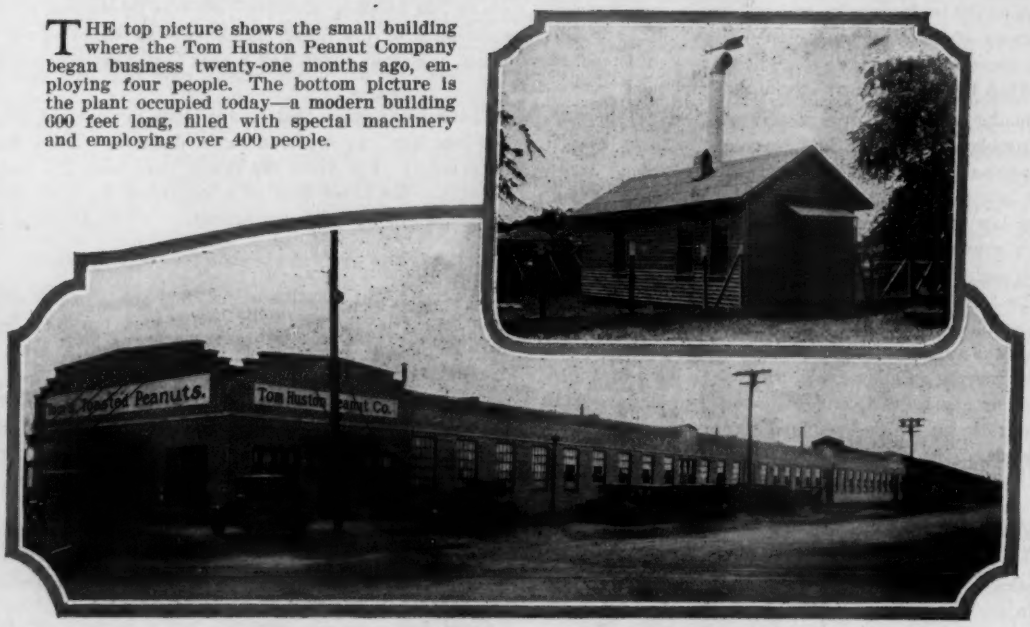
From time to time you have published in the "How Other Men Manage" section of COTTON questions and answers concerning the settings of different parts on Draper looms. Having had a good bit of experience on this sort of adjusting work I am submitting some suggestions for such settings based on this experience with a view to increasing efficiency in the weaving department.

Standard Settings: It is well to have a standard setting for every part, and to try to keep all of the parts set as nearly as possible to the standard settings. It is a well-known fact that all looms cannot be made to run with the same setting, but it is best to have a rule, and keep the parts set as near a uniform setting as it is possible to run them. Some of these points may seem simple, but they are very frequently neglected, and the simple things are the easiest for us to overlook, and sometimes cost a great deal of trouble and money.

Team Work: The most essential thing is team work. That is, for all to pull together to make the job a real success; as long as a few pull back success will never come. A chain is no stronger than its weakest link, and every man, regardless of his position, should feel that part of the success depends upon him and that the success of the room cannot be any greater than he makes it.

Pick Cams: Set the cams to start on the stroke with the crank turned to the top on circle. Fast speed looms should be set to pick a fraction earlier.

THE top picture shows the small building where the Tom Huston Peanut Company began business twenty-one months ago, employing four people. The bottom picture is the plant occupied today—a modern building 600 feet long, filled with special machinery and employing over 400 people.



Another Industrial Record in COLUMBUS, Ga.

TWENTY-ONE months ago the manufacture and sale of a 5-cent package of toasted and salted peanuts was begun in the small building at the top of this picture. It was carried on by four people. In exactly twelve months the profits and prospects of this business warranted a contract for the modern factory building, 600 feet long, shown above, and $80,000 worth of special machinery to equip it. Today the Tom Huston Peanut Company employs more than four hundred people, and the product manufactured here is sold in over 40,000 stores.

While this record may seem phenomenal, those who understand the peculiarly favorable industrial conditions would say that it is fairly typical of what may be done along other lines by soundly planned enterprises in Columbus and the Southwest Georgia area receiving hydro-electric power from our company. There is an immediate local consumption of meritorious articles, and the success of the Huston plant may be duplicated in textiles, furniture, clay and mineral products, food products and other industries favored by Georgia conditions. We would be glad to discuss, confidentially your ideas for removal, for a branch plant or a new venture.

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Columbus, Georgia

Harness: Set the harness so that both come up to the same height, so as to work the let-off evenly. If one harness comes up higher than the other, this will cause the let-off to make a longer stroke on this harness, resulting in uneven cloth.

Care of Harness: Some system of cleaning the lint off of the harness should be adopted. This should be done each and every time a new warp is tied in. This will prevent lint getting in the warp and causing floats.

Treadle Rolls: These should be taken out and cleaned and oiled when the warp runs out. This can be done by the loom cleaner, but the loom fixer should see that it is done before tying on the warp.

Shuttles: The screws that hold the spring and eye in the shuttle should be greased from time to time, and greasing the shuttles will prolong their life. Use tallow for this purpose. Watch the shuttles to see that the screws do not rub the reed as the shuttle wears.

Pallets: Keep the pallets on the let-off ground so they lead into the tooth of the ratchet wheel. This will prevent uneven cloth and will save the teeth of the wheel. Some mills make a rule to have these gone over once a year. This is a good rule. It applies to hold-back and slack pawls as well.

Ratchet Take-Up: Set so the take-up pawl, slack pawl, and hold-back pawl are divided, 1 - 2 - 3. This can be set with the loom standing.

Take-Up Rolls: Be sure that both ends are the same height, so as to prevent rainbow cloth.

Whip Rolls: Set both ends the same height, and the same distance from the horn on the loom side.

Pickers: See that the pickers are put on straight and paralleled to follow the shuttle all the way of the stroke.

Check Straps: Set the check straps so they will slide about 1½-inch. This will prolong the life of the strap. In order to do this it will be necessary to run the protector rod springs tight, and run the shuttle box tight, so as to do part of the checking with these parts.

Bobbin Supports: See that the bobbin support will not catch on the front box plate. It will be necessary to use a leather washer on the spring bolt to prevent this catching.

Daggers: Keep the daggers so they clear the frogs, and set the right-hand dagger a fraction higher than the left-hand dagger, so there will be no chance of the dagger catching on a dead frog and passing over a live frog. If the dead frog catches and the live frog does not catch, it will break the swords.

Transferrer Springs: Run the transferrer springs tight on over-speed looms. This will prevent the bobbins being forced through on the change.

Transferrer Fork: Keep the fork bent so the bobbin is carried evenly when changed. If the butt goes ahead of the small end, the shuttle springs will cause the small end to be forced down in line with the butt. This will break the filling on the change.

Feeler Bar: Set the oscillating cam so the feeler bar is in the center with the crank on front center.

Shuttle Springs: Keep the shuttle springs tight, as a loose shuttle spring will cause the filling to break on the change and sometimes cause break-outs.

Picker Sticks: Watch the picker sticks, and when they spring enough to raise the front of the picker, they should be replaced. This will cause excessive wear on the shuttles, and increase the warp breakage.

Crank Pins: Watch the crank pins and see that the lay is the same distance at both ends from the take-up roll.

Harness Rolls: Set the harness rolls so that the drum is evenly divided; that is, so each harness strap goes the same distance around the drum. This will insure an even lift on both ends of both harnesses.

Power Straps: Run the power straps at the right height to keep the lug straps and block level when the pick ball is on the high point of the cam. This will cause the lug to pull down and prevent it from riding up on the picker stick.

Pick Shafts: Keep all lost motion out of the pick shaft boxes, so as to prevent power loss or delay in the pick. This will prevent a lot of unnecessary slamming off.

Let-Off: Set the let-off so that the pallet lever comes against the pallet lever stop when the lay is on front center. This will insure an even stroke of the let-off each pick. If there is lost motion between the pallet lever and stop, it will cause an uneven stroke in the let-off which will in turn make an uneven stroke in the cloth.

Take-Up: Set the take-up gears so they are well meshed in but not far enough in to bind or ride against the bottom of the two, as this will prevent the loom letting-back in case of a filling break, and cause a thin place.

Small End Disc: Set the small end disc so that there is a sufficient spring on the end of the bobbin to hold it in place, but not enough to force the bobbon to jump when it leaves the end holder, as this will sometimes cause broken filling on the change, and at times cause bobbins to turn cross-wise and break.

Lay End: Keep the lay ends tight at all times as a loose lay end will cause excessive wear on the shuttles and extra warp breakage.

Crank Shaft Bearings: Keep the crank shaft bearings drawn against the loom side as they are inclined to rise up from time to time, and this takes the head gears out of mesh, and causes lost motion, which will cause the loom to slam.

Protector Rod Ends: Protector rod ends bending and leaving lost motion in the binder is caused by running the protector rod too slow and letting the dagger force the point under the frog steel, or too high so that it forces the dagger down.

Binders and Front Box Plates: Keep the binders and front box plates covered. These should be greased occasionally.

Heel Springs: Run the heel springs tight because a loose heel will let the pick ball leave the rim of the cam, and this will cause the rim to wear where the ball hits the rim as it comes back after the stroke.

Oiling: So many mills let machinery wear out on account of neglect in oiling. This does not mean to waste oil, but see that all moving parts are kept well lubricated. This will save more supplies than any one thing that can be done. In some cases there is too much oil put outside of the "oil hole". This will increase seconds, as it causes oily cloth or oil spots on the cloth.

CONTRIBUTOR NO. 1919

C. W. PETIT has resigned as overseer of spinning at the Borden Mills, Kingsport, Tenn., and has returned to the Monaghan Plant, Victor-Monaghan Company, Greenville, S. C., as overseer of spinning.

Selecting Combs for Slashing.

EDITOR COTTON:

Will you kindly let me know what you consider the proper combs to use in slashing, both the comb in front of the slasher and the proper comb to strike a tape in back. We make a wide range of sley anywhere from 2000 ends to 10,000 ends on a loom beam and I believe if you would give me the proper counts to use in the two above counts it would explain the whole thing clearly. I should add that the 2000 ends is on a 38-inch beam and the 10,000 ends on a 54-inch beam.

I recently dressed a set 9712 ends, 30/1, on a 54-inch loom beam and had trouble at the loom with the yarn being crossed badly. I used a 500 comb in front and counted the ends in, making about 20 ends per dent in the front comb. I was very careful in having it drawn in.

I have a complete file of COTTON back to 1920, and perhaps you can suggest one of the numbers containing an article that will cover this. I would like this information as soon as possible, and an early reply will be appreciated.

CONTRIBUTOR No. 2327.

Crooked or Bowed Cloth.

EDITOR COTTON:

Replying to the question of "C. C. (N. C.)," I think his trouble lies in the slashers. I take it for granted he is using the cylinder type slashers.

If he will examine, perhaps he will find one end of the immersion roll higher than the other, which would stretch the yarns at one end more than the other. Then, too, it would cause this stretch when the yarn is most susceptible to it, while it is wet, and as the yarn goes directly to the drying cylinders it would naturally set it in this stretched state.

Very often I have found that the immersion roll rack stand was out of place, causing this uneven condition. If he finds that is not the trouble, then perhaps the journals and stands on the immersion roll are worn, which would cause it to work out of line. I would suggest that "C. C." put dowel pins in the immersion roll rack stands after he gets them suitably leveled up, as they are bad about slipping and getting out of alignment.

Another suggestion I would make is that "C. C." use a good spirit level to level up the size vat, and if he finds that the roll journals and stands are worn, then have new journals and stands put on and the roll carefully leveled with the size vat. It is also well to put the level on the copper squeeze rolls, as they are very often found out of level.

I think this will eliminate his bowed cloth.

Now about the cloth being crooked three to ten yards from the end: I think this is caused from the cloth slipping on the sand roll for a few yards after the cloth is taken off. I have had this trouble on heavy goods, and the only remedy I ever found is to re-cover the sand roll or locate a drag roll so that more cloth must come in contact with the sand roll. In other words, the drag roll increases the cloth contact on the sand roll.

I might add that I once had a man tell me that he found unevenly built section beams caused him some trouble with bowed cloth. His claim was that beams were sometimes built in a conical shape on the warpers, that is one end of the beam would be considerably larger in diameter than the other end. It is true that for a beam to run well it should be as nearly a perfect cylinder as possible. However, I have never had any trouble along this line and cannot say from experience.

When "C. C." overcomes his difficulty it will be interesting if he will write his experience to this department of COTTON and tell what he did to remove the trouble.

A. L. (S. C.)

EDITOR COTTON:

Concerning the trouble "C. C. (N. C.)" is having with bowed cloth, will say that though I have seen a piece of cloth a little bowed, I have never run up against anything that would cause a complaint. However, these are the days of discoveries in the cotton goods game and one has to expect most anything.

There is a possibility that "C. C.'s" troubles are on the warper, caused by outside ends on the creel running with a little less tension. If he is not using glass or porcelain steps, I would suggest that he try one warper with them. He should be sure that the warps are run hard enough onto the loom beams so that the yarn does not slip on the beam at the sides where the greatest pull comes. He can decide this by noticing the run out of the beams.

As to the loom itself, following are some of the things that I know would cause the bow: On the high sand roll, especially on Draper looms, if the tin filleting has worn smooth it will slip in the middle and hold pretty well on the sides; if one side of the same roll binds it will have a tendency to hold on one side.

On wooden breast beams some of the old Crompton and Knowles looms have two steel fluted or corrugated rolls which the cloth goes through after passing over the breast beam. These have a bearing which is likely to get tight on one side. On other looms the same breast beam has a wooden bar which the cloth passes over after leaving the breast beam. Some think this bar should roll, but it should not, because it wears and turns unevenly, and sometimes it is warped. If it is, it spells trouble with a big "T."

If "C. C." is running narrow goods on a wide loom he should see that his whip roll does not give in the center—this is *very important*.

He should try one loom with a reed cap twice as heavy as the one he has now. He may be using a loom that was made for very light goods. I would also suggest that he try a bar of iron about ⅜-inch thick, fastened on the front or back of the lay to reinforce it.

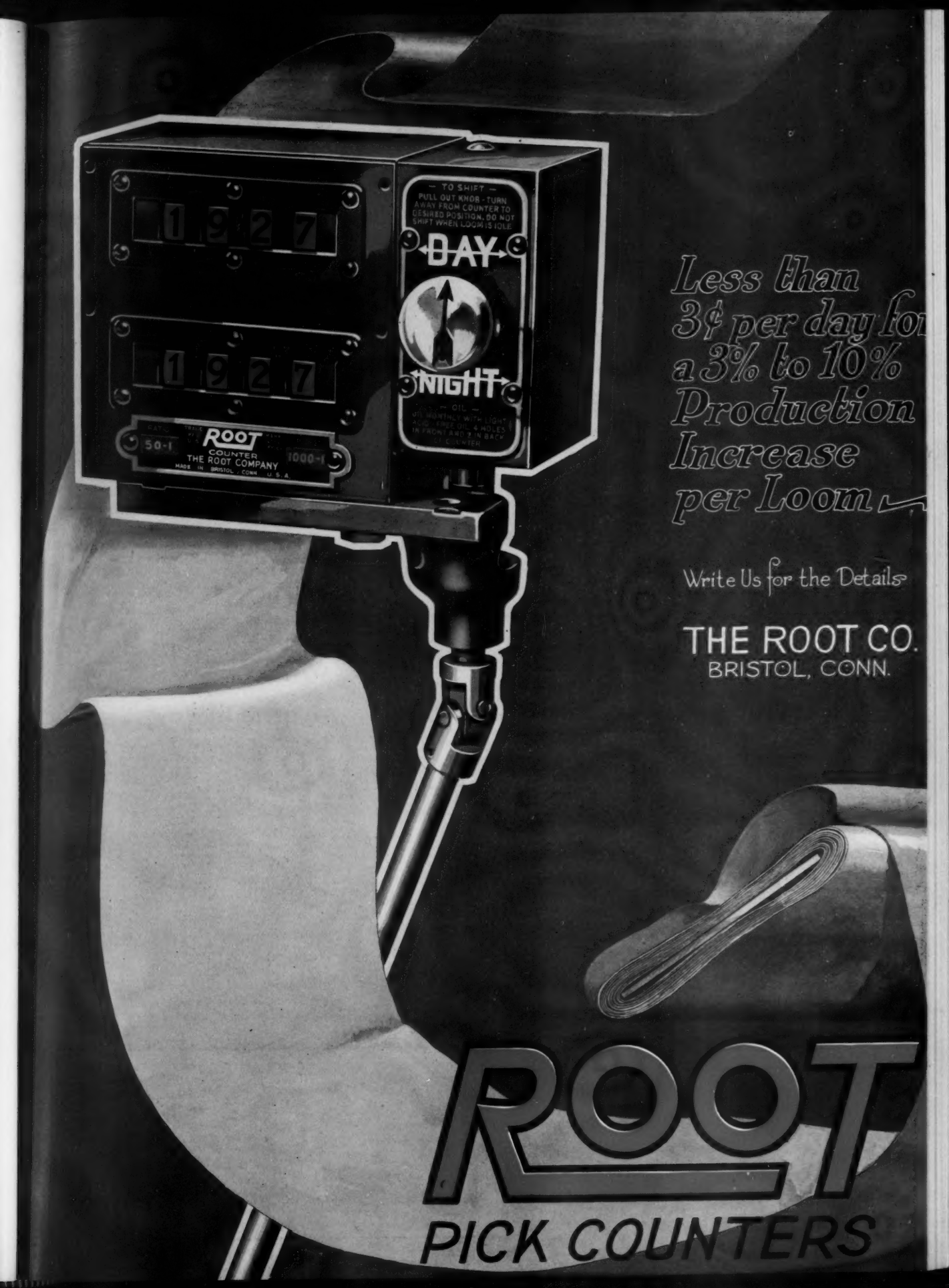
To kind of sum up, I would say that the last three suggestions, and the one of the smooth sand or take up roll, is where he will be likely to find his trouble, but I give the rest because I give him credit for trying out most everything anyone else would.

CONTRIBUTOR No. 524.

EDITOR COTTON:

I noticed in a recent issue the question by the contributor who says he is having trouble with crooked cloth coming from his looms.

One of several things might be causing this. If it is a Draper loom, you know there is an iron roll that fits against the take-up roll. If the spring underneath the cloth take-up roll should happen to have an uneven tension, this trouble would result. It would be especially likely on the wider looms which carry a spring at each end.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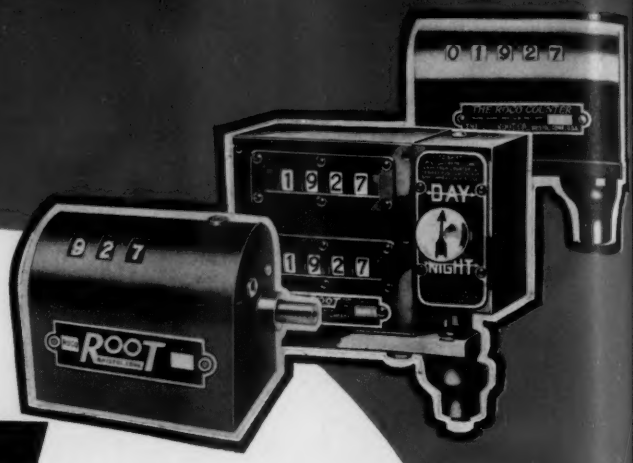

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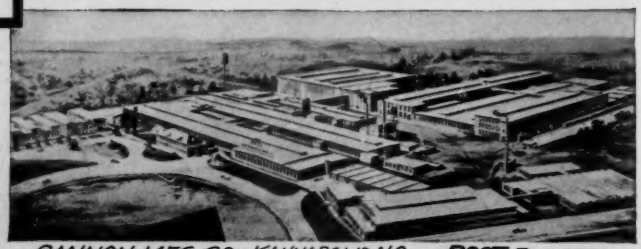

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These springs must be kept at as near the same tension as possible.

Another possible cause which might be overlooked is that the comb on the slasher could get clogged up so that it would put more yarn at one end of the beam than at the other, which would give an uneven tension in the loom.

It is also possible that the man having this trouble would find, upon investigation, that his size box and cylinders and front stands are out of line to a degree. These must be kept lined up true. B. L. (S. C.)

EDITOR COTTON:

In reply to the question of "C. C. (N. C.)" on crooked cloth, will say that I had some trouble a few years ago with about the same thing, and we overcame it by taking off the sand paper on the take-up roll and replacing it with perforated steel, wound on instead of in sheets.

He should have the pitman arms just the same length and then set his cloth roll the same distance on each end, measuring from the reed.

The weave which "C. C." is running is not the same that I was running, but then I think this will overcome his trouble. P. T. S. (Me.)

Keeping Even Numbers in Spinning.

EDITOR COTTON:

Dunhill Marsden's contribution to your February number under the above title is so interesting as to invite discussion.

I can assure him however that several other mills to my personal knowledge are following a similar practice. The principle involved is the same as that which originated the practice of regulating the lap weight on the finisher picker, as admirably described by Mr. Touchstone in your issue of February, 1925, and I personally believe that the regulation of lap weight will produce better results than that of finisher drawing, especially in cases where the card room is sufficiently well humidified so that the humidity can be maintained constant by automatic regulation.

I know of two large mills both under the same management, in one of which the card room is properly humidified. In that mill lap weights are changed as relative humidity varies and, although the finisher drawing weight is closely watched, experience has proved that the variations are small and comparatively little changing of draft is required. In the second case the card room is not humidified and in this mill both lap weight and finisher drawing weight are constantly modified, as relative humidity changes, on the basis of tables prepared to correct the weight for regain.

There is one important difference between the regulation of finisher drawing weight and that of lap weight which is worthy of consideration in preparing tables, namely, the variation in the amount of fiber lost by breakage in process which is greater in a dry atmosphere than in a moist atmosphere. I think most carders will concede that a picker lap produced in very dry weather and put through the card while dry weather continues, as compared with a lap produced in moist weather and carded during moist weather, will suffer a greater loss because of the breakage of staple due to its brittle condition. This factor must be given due consideration, as well as the variation due to change in regain, in designing a proper table to show the proper weight of lap based on the existing relative humidity.

In the case of tables for sliver weight from finisher drawing, however, the material has been through that part of the processing which is most likely to injure the staple, and I should suppose that it was proper to base drawing tables as Mr. Marsden has done on variation in regain only.

Mr. Marsden does not state whether the card room where his tables are in use is humidified or not. If not, it would seem to me that only two tests per day were insufficient to correct for the wide variations in humidity which occur between morning and afternoon in hot dry weather, or on days when a sudden change in weather occurs. It would seem to me rather to be necessary to note the humidity indicated by the recording hygrometer at hourly intervals and to make corrective changes in the draft gears and check the result whenever the instrument recorded a variation of more than five per cent in relative humidity during the hour past.

There is considerable interest at this time in the question of picker room humidification. Many mills are trying it out, and it is worthy of remark that most mills which are attempting picker room humidification have already satisfied themselves of the importance of humidifying all other departments. It is my own belief that if all manufacturing departments except the picker room are adequately humidified and automatically regulated, and that if in addition the lap weights are adjusted to correspond to changes in relative humidity in the picker room, it will be found that variations in count and weight not only in the finished goods but in all intermediate processes will prove to have been brought within the irreducible minimum.

It is possible however that means will ultimately be found for controlling the moisture condition of the picker lap, which will eliminate the necessity for such accurate and painstaking supervision as is required by the weight adjustment method.

T. C. (MASS.)

Marking Napped Goods in the Mill.

EDITOR COTTON:

I would like some suggestions from your readers as to the best way to mark cotton goods that are to be napped so that bad work can be traced back to the weaver or loom fixer. I will state the conditions under which we are working. The mill operates a day and a night shift and the cloth rolls are taken off the looms about every two days, depending upon the weight goods being made. The loom number is put on the end of the cloth roll with oil crayon by the man who takes off the rolls. The loom number is not removed in the napping process and the bad work can be traced to the loom but you can't tell whether it was made on the day or night shift. The inspection of the goods is made after the napping process.

Any marking system that can be applied to the foregoing situation must fill four requirements; the system must be such that it will not injure the napper rolls; that it will not be removed in the napping process; that it will in no way detract from the quality of the finished product and that it will not cause any waste.

All suggestions will be appreciated.

CONTRIBUTOR. No. 672.

Creo-pine Sub-flooring

IT is interesting to note that Creo-pine Sub-flooring which is generally accepted as a standard specification in the textile industry, is proving its economy and value in many other fields. (Above is shown the new Sears, Roebuck & Company plant in Atlanta, in which more than 1,000,000 feet of this material was used.)

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Selecting a Man for the Job.

EDITOR COTTON:

In the February issue of COTTON "Contributor No 1033" asks for opinions concerning his difficulty in picking one man, out of two good ones, one being a textile student and the other a fixer, so here's mine:

First of all, the man he needs as overseer must be practical, a good manager of help and a perfect "trouble shooter"; or in other words, thoroughly capable of locating defects in the system of his department as soon as these occur, as surely they will occur, and to be competent in this matter a man must have had considerable working experience in various sections of the same department.

Now it occurs to me that perhaps the fixer is a man of that caliber and probably would qualify in all the items I have mentioned, and no doubt such a man would in some mills fill the job as required, but is this man thoroughly acquainted with the more delicate part of the game, or could he always keep his department well balanced even though several changes be made on various machines?

All of this, of course, will call for calculative ability, and an overseer should be qualified in this art. The textile student will no doubt be well acquainted with the latter part of the job, but is he well schooled in the everyday defects and their remedies, and is he able to point out errors to his subordinates, and also have that confidence that such errors exist wherever he may locate same, either in the machinery or any other section of the work.

If this man can do the aforementioned, he will probably be capable of maintaining efficiency in all machines and would probably also be a fixer. A man with these qualifications, in addition to being able to control help, would be ideal, as such a man, to my mind, would, according to the technical education received, possess the necessary judgment which is the chief standpoint in running any department.

Still, we have one more point to consider, namely, the ages of these two candidates for the position, as we must remember that such a job calls for a man whose age and appearance command respect from the other employees.

So it seems to me that the fixer, probably a man of mature years, would no doubt be more able to control the help of the department than would the student, who probably is not very well acquainted with various "getting by" methods we see now-a-days. The fixer will be "on to" all that easily, and would soon find a remedy, if he possesses tact enough.

However, I would not care to choose either man for the job, as I lack sufficient information; still, I hope "Contributor No. 1033" will review my remarks, which I hope will help him out of his dilemna. D. E. (R. I.)

EDITOR COTTON:

In answering the request of "Contributor No. 1033" that all overseers and superintendents give him their honest opinion on "selecting the man for the job," I will first say that I am sure he wants to select the right man. Many choice jobs have been assigned to men because of friendship—a pull from some one other than the man who does the selecting. I presume that in the case of "Contributor No. 1033" "Fixer" or "Student" is to receive the promotion on his merits alone, or on his ability to run the job. He says that they both seem to be good men.

Now here is the proposition as I see it. Let us first look into the case of "Fixer." He has toiled in the heat of the day; he has made himself what he is via the mashed finger route of experience. He has always been right at his boss's side to give the boost needed to put a thing over, never asking the price of the extra lift given; ever ready with a word of good cheer, making those around him smile when they were downcast and life looked to them to be a failure. He realizes that life is short and it will not be so long a time (if he continues to be a fixer) until the boss will come one day and tell him that he is too old to carry on and that he will have to give the job to a younger man, and there will be no pension to retire on. "Fixer" is not what we would call a "polished" gentleman, because, as we know, he has never been to college. His English is bad. He can't make an after-dinner speech, but he is a gentleman; he is honest to the core. He did not have the money to spend for a college education, but he has learned enough at odd times to figure the changes to be made in his department. A man like this is entitled to promotion.

Now take the case of "Student." He has had the advantages of an education which fits him for or places him in a position where he is able to select for himself the calling which would give him most in life. He has the possibilities of making for himself a great reputation. He can use good English, can make an after-dinner speech and is capable of feeling for others. But there is something in the textile world that he will never know until he has acquired it through actual experience.

"Contributor No. 1033" struck the key note when he said "Fixer" was the man he called upon when the production was low. "With all due respect to "Student," why should he hesitate? S. C. (S. C.)

EDITOR COTTON:

In answer to "Contributor No. 1033," I am glad that he wishes to give these two men a square deal, and I think that no one would appreciate it more than his fixer.

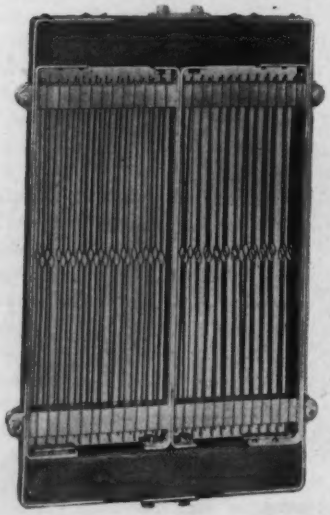
The student has undoubtedly spent considerable money for his education. What has the fixer spent? Well, his cost has been in years of hard work, starting at the low wages: faithful to his employers and he must be tried and true, or he would not be considered for the position.

If the contributor could just put himself in the fixer's position and realize what it means to get what the fixer's has—experience—he would not hesitate in his choice of the fixer.

Now let us consider the student. He has a good education, has still to get the practical end of the job, and eight months is not enough time to acquire it, although he may have been employed elsewhere in the same capacity, but that does not seem likely from the reading of the letter.

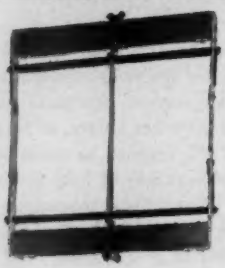
"Contributor No. 1033" does not wish to lose either man. If the student is given the position I should think the fixer would do as any real practical man would do—get out and try somewhere else. The student could have no hard feelings if he is really trying to get somewhere, as anyone who has worked for a number of years knows that it is better to work for the man who has full practical knowledge than the one who has only the theory, so considering everything, the man with the experience, is the one for the position.

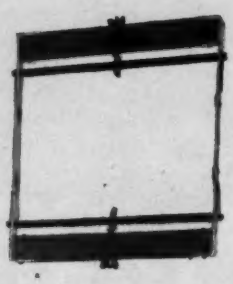
It is such things as giving students the best positions, that takes the ambition out of such men as the fixer. Let



Double extra-reenforced Frame

Frame reenforced with extra rod.





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Here is a Duck Harness Frame built like a battleship. It is the result of years of experiment and improvement.

No man in charge of duck weaving needs to be told of the severe strain placed on heddles and frames by this fabric.

The new "Master Duck" Heddles and Frames will take all the punishment a duck loom can give.

Furthermore it is made in extra heavy models for wide looms.

Study the illustrations above. Note the thick bars of steel—the patented bracing and reenforcing. Look at the heavy heddles with their large, smooth, cornerless eyes. We will be pleased to send you samples of these Heddles.

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Reeds — Beamer
Hecks—Combs.

the student get his experience first, and the position after; not the position and then the experience. That is contrary to all things.

A child must creep before it can walk. Let it so be in this case. T. O. (CONN.)

EDITOR COTTON:

Answering "Contributor No. 1033" in reference to "selecting the man for the job," he states that the textile student started about eight months ago. Well, I will say that probably the student spent about four years at the most, in school. What at? Not fixing looms for four years. No, he evidently got, as I got in textile school, the theory and some calculations. This, plus eight months, is not enough experience for the position of overseer.

The loom fixer. Let's take his side of the case. He works every day toward a future and thinks that the management will reward him by promoting him. Do this and you have a man who will work hard and do his "darnedest" to make the job something he will be proud of. Being a loom fixer—goodness knows they are scarce, good ones—he will know why his goods should be of a certain standard; why his production will be of the per cent it should be, and will strive to be a key man in your corporation.

Maybe he lacks technical training. All right. Promote him. Give him the opportunity to purchase a course in textiles that will fit him to compete with any textile graduate.

Henry Ford, Benjamin Franklin, John L. Merrill, president of the "All American Cables, Inc.," and hundreds of other successful men, did not have the education when opportunities came, but obtained the education afterward.

The textile school man will always have his diploma. Give the fixer, who at present is a graduate of the school of hard knocks, a chance.

I have had textile school training. This consists of routine—no sudden problems to work out. I have also had the practical end of the game, and no school on earth makes thin places, thick places, reedy places, smashes, poor warps, breaks picker sticks, etc., etc., and if they did, in order to teach the boys, it wouldn't do any good, as every mill has its individual troubles, and your student would not find the cause on "page 43, etc."

As a closing example, would a man hire as a chauffeur to drive his family out on the highway, one who had just taken eight driving lessons or more, or would he give the job to the man whom he knew to be capable and who understood every part and detail of the machine he was driving?

I would advise "Contributor No. 1033" to give the fixer a square deal. W. B. (MASS.)

EDITOR COTTON:

Answering "Contributor No. 1033" in reference to which man, the student or the practical man, should be promoted to the job mentioned, will say, everything else being equal, aside from what has already been stated, I would give it to the fixer. Why? For this reason—although the textile man may have spent a few hundred dollars to gain what knowledge he has of the mill business, the fixer has spent years of work and toil to gain his, and no doubt the most of it right in the very plant that has brought forth the question; besides, the textile man's knowledge consists of figures and theory that at times will work out all right, but more often, will not, and then he wonders what the devil is the matter.

The man who has come through from his boyhood has the practical side of the situation. He knows the machinery as well as he knows his own name. He knows just what it will do and how to make it do it. I grant you that he has to have a smattering of how to make the everyday calculations, but we are taking it for granted that he has that.

The textile man will usually fuss around with a pencil sticking behind his ear and confuse every one concerned, with his figures and theory, while the practical man will grab a wrench and do something.

Another thing to consider, and a very important thing at that, is the ability to manage and get along with help. It makes no difference what a fellow knows about the business, he just can't run a cotton mill all by himself, and any one can write back time tickets.

The writer is not yet an old man, but he has spent nearly all his life in a mill, and what he has said, and will say in the remainder of this article, is based upon actual observation.

Some of the very best mill men in the South today are composed of men who have been through all the hackles, knocks and hardships of the every day cotton mill hand, they have learned from actual experience both the practical side and the human side of the ups and downs in the every day mill.

To my mind the best mill man in my neck of the woods started out so doggone poor that he had to go to the creek on Saturday night and wash his shirt so that he would have a clean one on Sunday. When quite a little fellow he ran around the speeders that his mother operated, but today he has charge of more than one large mill and is paid a very enviable salary.

The best carder of my acquaintance has no schooling. He has never seen the outside, to say nothing of the inside, of a textile school. He's very, very "shy" on education, but he's a darn good carder.

I have in mind a boy who was raised in the streets and gutters, and what he knows in the way of education he picked up himself after he was about grown, but he's doing as much, if not more, with forty-year-old spinning, than some are doing with the latest outfit.

Please do not take this as a knock against textile schools or colleges. I am simply trying to say what I would do and at the same time giving my reasons for doing it.

An education is a wonderful thing to have, and for one who intends to follow the mill business a textile training is a mighty good thing, but between the two, textile training or practical experience, give me the latter every time. There are a few, and a very few, textile trained men who have the guts to get into a suit of blue denim and dig out the things that are necessary to complete their training, but the vast majority of them are looking for a white collar job right off the bat, and really think that such a job should be handed them on a silver waiter. They seem to think that because they have a sheep skin that this also includes cigarettes, a swivel chair and a glass-top desk to throw their feet over.

The writer has seen some good men who have had this training, but just let the reader allow his mind to drift back over the years that have gone by and think of the

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men he knows personally, and who have gained executive positions, and he will find that 99 per cent of these men are those who started out as sweepers, doffers or loom cleaners.

Textile training? Yes, by all means, if one can get it. Practical experience one *must* have. J. I. M. (GA.)

EDITOR COTTON:

This is in reply to "Contributor No. 1033," who asked in the February issue whether he should promote his fixer or the textile graduate to the position of overseer.

He should have no trouble in selecting the man if he has not committed himself to the student and made him some offer. It doesn't matter, really, if his hands are not tied. The student, if he spent $10,000 getting a textile education, is not fitting himself for an overseer's job, and no one can expect to hold him on it any longer than he can get a superintendent's job or something else higher up.

Now let's look at the fixer. This superintendent knows him, and is satisfied he has the practical experience to hold the job, and will appreciate the place and give first-class service for many years to come. And he can feel satisfied at night when he goes home, and he will find the fixer on the job in the morning when he goes back to the mill. That is something for your contributor to think about. The student has eight months experience, he says, and the fixer, I judge, has eight years. How many little things have happened in eight years that the fixer understands how to handle, and if some of them met the student in the spare floor he wouldn't know what they were?

I have been a superintendent for thirty years, and I never let friendship, education or what-not stand in the way when I select an overseer. What I want is a man who can run his job at all times, whether I am at the mill or off to a convention. Just bear in mind that a man doesn't save anything by feeding a dog and doing the barking.

I don't think the textile man would feel in any way hurt if "Contributor No. 1033" gave the fixer a chance at the job. If he fell down, the student would be in line for promotion. On the other hand, if I were in the fixer's place and the student was promoted without considering me, "Contributor No. 1033" would surely need a fixer as well as an overseer, because his actions would speak plainly that the long services of the fixer were not appreciated, and no man who is worth while would stay under such conditions.

I want "Contributor No. 1033" to think this over, and go home, and repeat the Golden Rule to himself, and then get out his Bible and read what the Lord says about service and reward. He can then go back to the mill the next morning and decide that question easily. O. T. (N. C.)

Solving a Weaving Problem.

EDITOR COTTON:

I have noticed the question of "F. T. (Conn.)" who says that running four ends as one in a dent from the bottom beam that he has trouble with this packed yarn in not taking up as fast as the bottom of the beam, causing the drop wires to hang down, stopping the looms and causing the packed cords to weave under. After considering this question I would say that yarn for cords, and yarn for ground work are both on one bottom beam, as here discussed.

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Which is unconditionally guaranteed:

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Further information gladly furnished by the Chamber of Commerce, Greenville, Miss.

If this is the case, and the goods are being woven on a Draper loom, with Roper let off, the difficulty could be corrected by using a second beam above the bottom beam containing the yarn intended for the cords, each dent containing four ends. The upper beam would require a rope let off. I have used this method and it runs very well.

T. M. (TENN.)

Thoroughness Necessary for Best Results.

EDITOR COTTON:

I wish to thank you for the publication of an article headed "Overcoming a Picker Trouble" appearing in the "How Other Men Manage" department of the March issue of COTTON. This is evidently in answer to my inquiry of several months ago, yet the question was fresh in my mind and the article by "Wash" is exceedingly helpful.

If you will allow the writer to analyze briefly, it occurs to me that a very common fault with our methods of thinking was illustrated by my difficulty with the uneven lap and the steps I took to overcome the same. I stated in my request for advice that, "regulation of the draft doors on the sides of the machine and decreasing of the fan speed have, to date, had no effect on the unevenness." In other words, so far so good, but why not go farther into a subject than trying two unsuccessful remedies?

The best thing "Wash" said in the entire article, and this is by no means intended to belittle his very thorough and excellent practical instructions, is this, "In such a case, one must study the principle of the machine." This one sentence formulates a plan of thought and of action which enables one to eliminate probable causes one at a time until the trouble is determined. It means thoroughness and its rewards are experience and results. It is worthy of an "Old Timer" article.

In passing, "Referee" states that he tried to get the small middle roll replaced with larger ones, his aim being to prevent laps around the middle roll with closer roll settings. A smaller front roll, and back roll, would enable him to set the bites of the rolls closer together for short staple, but the larger the diameter the farther apart must they be set.

B. B. (N. C.)

Where a Good Man Counts in the Mill Game.

EDITOR COTTON:

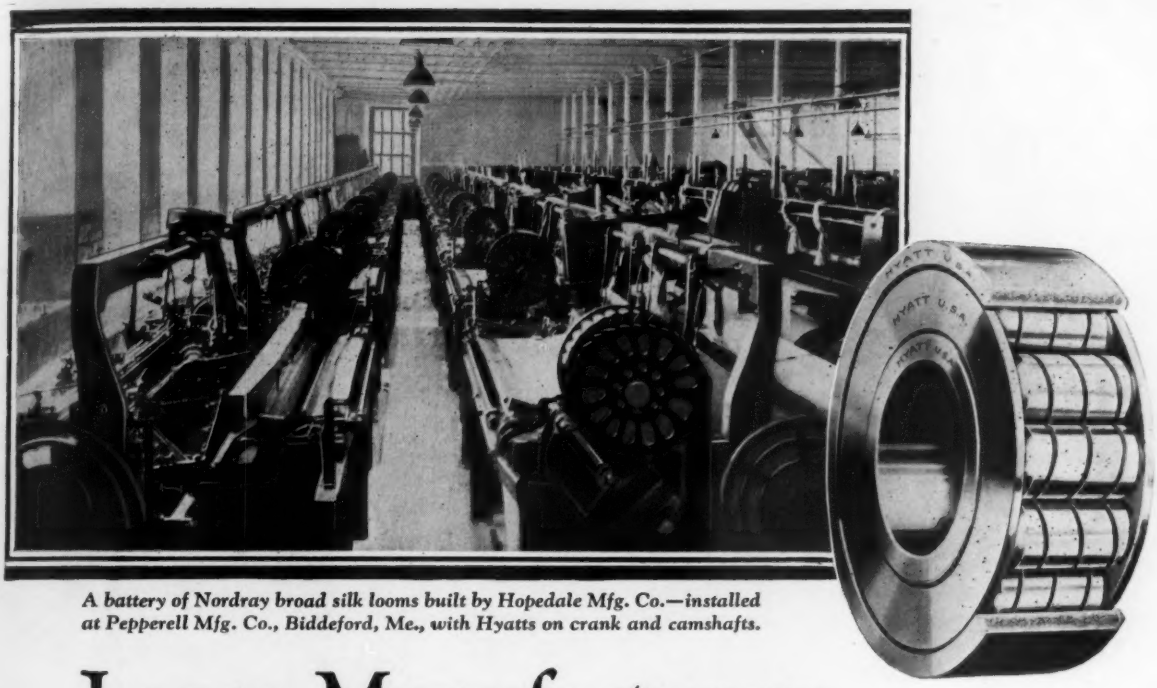
After devoting 25 years of my life to the manufacture of cotton, as overseer and superintendent, I have come to the conclusion that when everything is going well, with plenty of help and plenty of orders, most any old "muttonhead" or any half competent office boy can hold the position as superintendent or overseer and have plenty of time to talk to the traveling salesmen and entertain the ladies of the different aid societies. But sometimes things go wrong; at times it looks as though nobody can get them right, and back on the road to success. Just about the time we think we know it all, and find ourselves reclining on flowery beds of ease, something springs up and knocks the props out from under us and our dreams of perfection, and makes us feel like we are a joke.

During my many years at the game, I have taken some of my troubles to my friends, and have always responded to the best of my ability when some of them brought theirs to me. It's a grand thing to know we have helped some one when they were in trouble, and it feels good to get help when we are up against it ourselves. Well if nothing ever got wrong, there would be very little need of superintendents and overseers, and for that reason we should be glad that we have a service to render that strains our capacities to the limit sometimes. If we never had anything to happen with our work or any seeming impossibilities to master, we would never know whether we were an asset or an object of charity. We cannot stand still. If we prove worthy to our trust we must be on the move. New plants are going up; new and improved machinery coming into service; competition growing stronger every day. If we keep at the game we must keep up with the times, and to do this we must know how to adjust ourselves to the changes that come about every day. And unless we can do this we cannot keep up with the front rank, as this is, or is nearing the time of the survival of the fittest.

To know what the other fellow is doing is the only way we can hope to stay in the front rank. To know how to go him one better is that much in our favor and should be our aim at all times. This is the foundation of improvements and progress. The day we become satisfied and decide to let well enough alone is the time that progress and improvement is coming to a standstill and we will soon drift back to where we started. No mill, or mill man, should be satisfied. They must constantly be searching for some way to improve some part of their organization. I doubt very much if there is a mill in operation today that some part of it could not be improved in some way. I have yet my first mill to see that didn't have something wrong, just a link in the chain a little weaker than the others. For instance, one department has too much machinery for the others, or the humidity is more favorable to some than to others, or some part is not lighted as well as it should be. Several seemingly little things go to make the big things, and it's the little things that should be corrected and the ones that should have the most attention.

Here is where a good man counts, as he is always looking out for the little things. But how many of us are good men, and who is there among us that does not get careless at times. Or probably we get to feel our importance so much that we overlook the little things, which invariably, in due time, place us in an humiliating position and causes a loss in some way to the mill. We superintendents and overseers have the great problems before us. Every year, month and week brings us up against stronger competition, radical changes and departures from old customs. So it is up to us to change our ways as necessity requires; then we will be able to meet all requirements and keep our mill constantly forging ahead. Don't try to stick to old customs and ignore the new ones. Try the new ones before you condemn them. Give somebody else credit for knowing something. This is the time you will begin to learn.

Study your job carefully, learn its capabilities and capacity. Search out the weak places and apply the remedy, if it is in your power to do so. Now after you have reached the point where you think you know it all, and there is no chance for improvement in your mill, get one of the doffers or roving haulers to make an inspection, and you will probably be surprised at the things



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they will find wrong. It is not very often that a fellow wants to own up to his own mistakes in the estimation of himself, but for the benefit of some of my young brother overseers or superintendents, who possibly may be in the same fix, I will cite an instance where I was the star in a bunch of know-alls.

I had been overseer of one or two small rooms, but as this was my first job of any importance, it made me feel all the worse for getting myself in such a humiliating position. I had reached the point in life where I had begun to think that I knew about all, and that nobody had any right to match their judgment against mine, or to insinuate that I was wrong.

It was just after starting time one morning. I had just returned to my desk after a parade through my room, with my thumbs stuck in the arm-holes of my vest, and while I was standing there mentally complimenting the mill on finding such a brilliant and progressive carder as myself, the office boy tapped me on the shoulder and informed me that the superintendent wanted to see me. I didn't get in any special hurry, but after the help had been placed I decided to go, thinking that he probably wanted to give me one of his choice cigars, or notify me that my pay was going to be raised on the first of the month, one or the other. The mill, or mills rather, were considered very large at that time and employed two carders, two spinners and two weavers. The superintendent who was a man of considerable experience, and not in a very good humor at this time, was waiting for me and wanted to know what was wrong with the five-hank roving. "Not anything," I told him. "I have just made an examination of all my machines and everything is going all right. "You are a very valuable man," he said "if there is nothing wrong in your room. I have run some of the best jobs in the States, and I never looked over ony of them but what I found a great many things wrong. Now the spinner says the five-hank roving is breaking back and the help can't keep the ends up. Suppose you go look and see if you can find the trouble. If you are not large enough I will come up myself and find it for you."

About that time the boss carder from the other mill came rushing in and stated that regardless of consequence, he would be compelled to be off that morning, and probably the rest of the day, owing to the fact that he had some very important business to attend to. Feeling, he said, that something like this might happen sometime, he had been drilling his second hand every chance he got, and he thought that if the superintendent would make several trips through the room during his absence things would probably run until he got back. The superintendent looked up at both of us as though he were at the mercy of a couple of outlaws holding him for ransom, and said, "Sure, go ahead. Take a couple of days off. If your room is in such a condition that you can't trust it to your second hand for a couple of days, I need another man for the job, and the sooner I find it out the better it will be for the mill."

Well, I didn't wait to hear any more. I went up and started to hunting for trouble. I have always been glad that I didn't invite him to go with me. Did I find anything wrong? Yes, dozens of things. One speeder even was running without a tension gear. I learned two things that day I never have forgotten. One of them was, take nothing for granted, but be sure you are right. The other was that the world could get along without my services, and without the slightest inconvenience. But every man has some redeeming quality, and while the world can do without him, he comes in mighty handy sometimes. Especially if he is a fellow with brains enough to profit by his mistakes.

As I stated at the beginning, there are times when things go wrong in most all mills, and our thinking power is taxed to the limit. To be prepared for such, we should keep thoroughly familiarized with all the little details while the mill is running smoothly and coming up to our expectations, so that we will be able to detect any little thing that may go wrong. But this does not seem to be the rule that we go by at all times.

I remember once, several years ago, there was a large mill that had been very prosperous, but at this time the production had fallen in the spinning room until there were about 300 looms idle for warps, and nobody seemed to know why. The mill had plenty of help and the work was running unusually well. One boss spinner had been with the mill a long time. Everything went on so well and the production was so high that nobody seemed to care how he got it. He got results, and that was sufficient. But he had secured a superintendent's position and left, and that was the starting of the trouble. Production went down. They let his successor go and hired another one. After waiting a while for results, which they didn't get, they changed overseers again. They kept changing. I was the fifth man. I set to work to find out what the trouble was. I asked the boss weaver to give me some idea as to how much warp and filling he needed to keep all his looms going. I calculated my production at one hundred per cent, and found that it wasn't in the machines. Everybody I asked was sure that the pulley was the same, the gears and the speeds the same. I had about made up my mind to "pull my freight" before I was run off when I unexpectedly ran across a clue. I found hundreds of draft and twist gears hid under the stair steps. The black grease on them told the story. They had been in use not so very long ago. I put two and two together, and with what little information I was able to scrape up, I found that the warp frames had been lightened two teeth on the draft and three teeth of twist put in, the filling heavied one tooth on the draft and a tooth of twist taken out. I didn't tell anybody of my discovery except my second hand. We stayed in every night and changed them back, a few at a time. It was not long before the warps were all in and everything going well. Apparently there was nothing wrong, but it cost the mill hundreds of dollars in the loss of production. If there had been some system of checking all the gears at regular intervals, this stunt could never have been pulled, and no loss incurred.

In looking over the prices of the different weaves recently I noticed something that carried me back to the time that I held my second position as superintendent. It was the difference in price between two weaves made with the same grade of cotton and practically the same number of warp and filling. The only difference was the width and picks, but the price of one was 5 cents per yard and the other 9⅝ cents per yard. Quite a difference in price. The mill had been running about two years and had lost money from the start. The stock at that time was being quoted at $18.50, and nobody would buy it at that. The looms were of the plain type and running on

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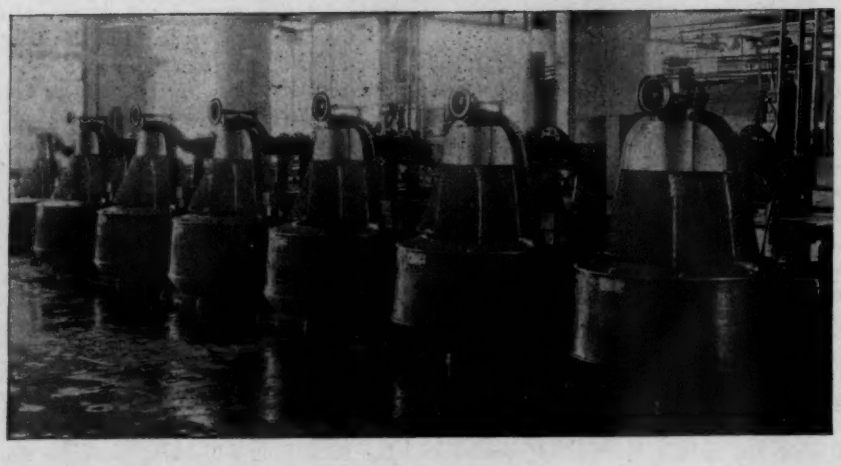

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the cheapest and easiest weave in the print goods family, trying to compete with automatic looms. In fact, the mill had been started on different goods from that for which is was designed, which I soon found out. The day I took charge the mill was idle and the help loafing in the village, at half pay in order to hold them, hoping that the price of cloth would get better in the near future. After I had been there a week or so the president came around and asked me what I thought of the situation, and I told him I thought the only chance we had was to change our construction, get into a harder weave and make our looms and help do more work for the same money. I handed him some papers with figures to support my contention. After looking over my figures he said the proposition looked good but his experience had about convinced him that there was practically as much to be made in one kind of goods as there was in another. However, as he didn't think we could do any worse, he would take it up with the directors and let me know what they thought about it. I was allowed to go before them and state what I thought we could do, which resulted in getting new harness and reeds. The rest is easily told. We changed 600 looms off 6-yard goods, getting 43 yards or 7 pounds a day at 5 cents a yard, or 30 cents a pound to 3.80 yard goods 34 yards or about 10 pounds per loom at 9⅝ cents per yard or 36½ cents per pound. The difference between 7 pounds per day per loom at 30 cents per pound, and 10 pounds per loom at 36½ cents = $3.65 — $2.10 = $1.55 × 600 = $930.00.

Of course our labor increased some, also our power cost increased, but we changed our mill from a losing to an earning proposition, and the mill today is on practically the same goods, but the plain looms have been replaced long ago with automatic looms. I stayed on the job five years, when I left to go back to a former employer.

Another case of overlooking or misjudging small things, which cost the mill several hundred dollars, and a few men their jobs, happened in a large weave mill and is worth mention and could happen again in most any mill of the kind, and which cost a great deal of money before being detected and corrected. The damage in this case happened in the weaving department, and the cause finally was traced to the slashers. The trouble was first noticed in making the work run bad to a small degree. As it was in the month of March, with dry air and considerable wind, it was thought that the warps were brittle due to the fact that they couldn't keep sufficient humidity in the room. By close observation it was learned that only certain warps ran worse than the rest of them. They started hunting for the trouble, beginning back in the opener rooms. One man suggested that they were putting too much waste into their mixing, and they finally decided to cut the waste out, which they did. The superintendent being a man desirous of quick action, had the yarns that were made from the stock after the waste was taken out, kept separate from the rest of the run on certain machines. So when the warps were sized and put in the looms they were all right, in fact slightly better than the average. They thought they had found the trouble and the matter was dropped. The bad warps on the looms were checked and tagged so everybody waited to see if any more bad warps would show up. This happened during the middle of the week, and sure enough, Saturday, when they checked up again, they still had the same number of bad warps. Think-

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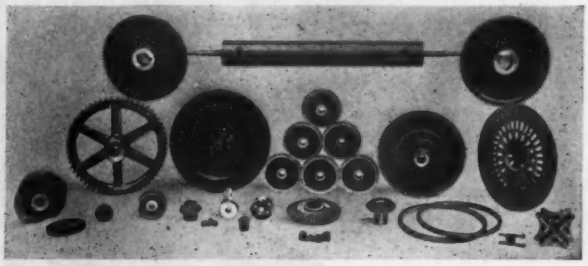

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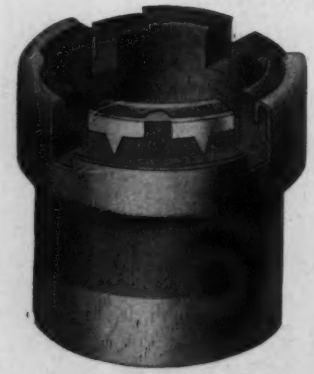

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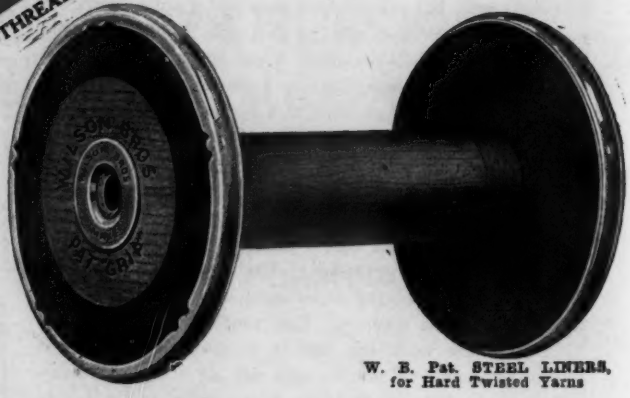

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ing they had overcome their trouble, they dismissed it from their minds until Tuesday evening some of the weavers in another part of the room complained that the fixer had given them a warp that would not run, due to the fact that some of the ends were continually breaking.

Another investigation was started. It was decided that the trouble must be either in the starch or the sizing compound. They had changed compounds the first of the year, but the starch was the same they had been using ever since the mill had first started. The compound was made from an old recipe and was being used by several of the best mills, and they could see no fault in it. However, the people making the size were called in and their opinion obtained. They recommended that a set of warps be made on a certain slasher, the same as they were getting from all the rest, and then make another set on the same slasher, with a slight increase in starch and compound, which they did, and the warps were put in close together where they could be watched. They kept tab on the breakage, and when they compared figures they found that both sets of warps were running well and showed no unusual amount of breakage. During the time the experimenting was going on, every now and then a tender or brittle thread warp would show up in some part of the room. In tracing the warps back to the slasher they would find that some of them came from all the slashers, twelve in number. The slasher men said they were doing their work like they always had, and couldn't give any explanation as to where the bad work was coming from.

Then the size makers recommended reducing the steam pressure in the slasher cylinders. All the warps made while they were around seemed to have nothing out of the ordinary the matter with them, but every now and then a brittle warp would show up, sometimes in the center of the beam or after several cuts had been woven off the beam. They couldn't get any closer to the cause of the trouble, due to the fact that they were looking for it at the wrong time, and in the wrong place. So the size makers agreed to pay the expense for getting an expert slasher man on the job if he found the trouble due to their sizing compound, and recommended a man employed by a certain large mill which was using his compound. The arrangement was made and the man was borrowed for a week from the other mill.

He arrived on a Sunday and was immediately taken into the mill, thinking that he might stray onto something that would give him something to sleep over that night. He was taken into the weave room first, where he inspected the warps, both good and bad. Then he was taken to the slashers, and he looked them over carefully, but didn't find any fault or have any suggestions to offer, until all were seated in the superintendent's office, when he was asked: "Well, Mr. B. what have you found so far?" "Oh, nothing but a little small great big thing", he said. "Didn't any of you gentlemen notice anything wrong in the slasher room?" Everybody agreed that they didn't. "Well I did," he said, "and that was, that your size boxes were partly full of spoiled size, which leads me to believe that your slasher hands are going to boil it up and use it Monday morning, and the first warps off your slashers every Monday are the ones that are giving you your trouble." He suggested either the use of a

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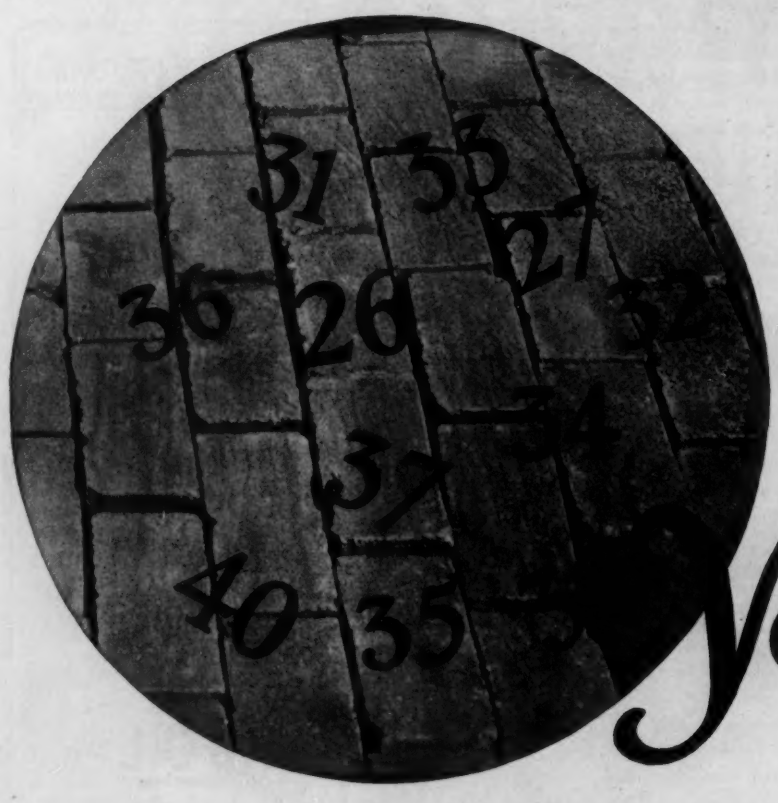

Years!

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preservative in the size to keep it from Saturday until Monday or to throw the size away, which was done, and the trouble soon disappeared.

Out of the multitudes of seemingly small things that come up from time to time, this was one of them. The cause of all this trouble was a new slasher foreman. He had been sizing heavy, coarse warps a good many years, paying no particular attention to the effects of the size and thought he could continue his same system on delicate fine goods. And as nobody made any investigation of the way he did his sizing, the mill had to pay the price of his mistake.

Errors made years ago were not as costly as they are today. We had a good margin most of the time and not so many competitors. We could waste a good bit of our profits and then come out on top, but those days are gone never to return again. We have different problems and bigger ones coming at all angles, and sometimes several at a time. We don't only need all the brain power we can furnish, but all we can borrow from the other fellow. All the money spent and time taken up in attending textile meetings is as good an investment as one can make. Not only are the textile meetings beneficial to the men in helping them to solve their problems, but they add to the earning power of the mill by advancing new ideas and suggestions in lines of improvement, and should be encouraged and assisted in every way possible by the higher management.

To know what the other fellow is doing gives us a gauge with which we can measure our own work, and as an inspiration for doing a little better if possible. Of course we should be willing to lend the same kind of helping hand that we should like to receive. This can be done without giving any of the trade secrets of the plant away and will help to make better men.

As I have said before, one should never be satisfied that everything is going right and nothing going wrong, as improvements are being made every day in all branches of industry. It is a positive fact that none of us are perfect, so if we want to get the best results with the material with which we have to work, we should consider everything wrong and then work to improve conditions, and if big things are not accomplished, we will at least probably do as well as the other fellow and will come in handy where a good man counts.

CONTRIBUTOR NO. 426.

Passing the Buck and Cooperation.

EDITOR COTTON:

What does anyone think they accomplish by "passing the buck?" Does it not demoralize any organization? Is anything accomplished by so doing? There certainly is not.

When work is running bad in any department and the man in charge of that department does not try to find out if something is wrong, but just says: "It's the way the other departments send the stuff to me. I can't run it and there is no use for me to worry about tracing it up." Does that help the cause? Does that let the overseer of that department out of it? No! That makes the employees lose interest in trying to produce first-class work. It causes the company to make less money and it causes a

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larger labor turnover, which is costly to any company.

A weaver says: "This yarn is so bad I can't keep my looms running at all. I am not making a living here and the cloth I am producing is seconds." He goes to the overseer and tells him he is quitting and why. The overseer says "All right, go ahead, I know you can't run this stuff the spinner sends us. I don't blame you for leaving." What has he done? Why he had stood there and let a good weaver leave because he, the overseer, hasn't tried to remedy the cause.

The spinner says: "It is the roving the carder sends me. I can't make good yarn out of it."

The carder says: "It's the cotton. I can't card it."

What have they accomplished? Nothing at all. Why don't they get together, exchange ideas, cooperate and have a really successful organization?

Let a carder be interested in seeing the whole plant succeed by seeing that everything in his department is producing first-class work, by getting the cooperation of all his employees and letting them know he is interested in turning out good work. Then seeing that it is done or finding out the cause.

Then let the spinner do the same, working with the carder and not against him.

Let them both work with the weaver. Be interested in seeing him produce first-class cloth. The weaver will be interested enough to try and do that.

Then the cloth room overseer should see that the graders and inspectors do their duty. Don't let them cut everything to get rid of it, but see that it is graded to pass, and not cut in short lengths and put in seconds just to let the grader keep up and the weaver catch it because the percentage of seconds is too high. The weaver can go to the cloth room and see what he is sending out there each day and then find out why those thin places are coming; where so much oil comes from; why that flat ran through a double cut before it was found; why that kinky filling hasn't stopped, etc.

Let everyone work and cooperate together if you would see a continually successful organization. W. C. (N. C.)

Saving Warp Waste.

EDITOR COTTON:

In the February issue of COTTON was an article entitled "Saving Waste at the Slasher and Loom." This was on page 356, and was accompanied by four photographs.

The article in question was very good, but the manner in which the two strips of gummed tape were put on the sheet of yarn at the slasher does not give the greatest possible saving in waste. The distance between the two strips of gummed tape, instead of being about 36 inches, as one would be lead to believe from the photographs, should be only about 6 inches. That is, two sheets of gummed tape, properly moistened, should be put on the sheet of yarn, these pieces of tape being about 6 inches apart. They are put on the top side of the sheet of yarn, and the slasher started up so that the warp beam will make one complete revolution. This is to make sure that all of the threads in the sheet of yarn are properly imbedded in the gum of the tape, as the tape passes the presser roller. The beam is then slacked off, and, with a pair of shars, the yarn is cut between the two pieces of gummed tape. Three small pieces of the tape, about 6 inches long, are then used to bind the loose end of the sheet of yarn on the loom beam down to the beam. That is, one 6-inch strip is put on near each beam head, and the other in the center. The beam is then doffed, and the slasher tender and his helper, take the other end of the sheet of yarn which is coming from the slasher and place it carefully on the new loom beam, putting in the stick just behind the sheet of gummed tape. It is then possible to start up the slasher without any "hump" in the yarn, and when the beam is woven in the loom, the weaving can continue until the stick is ready to pull out of the slot in the loom beam. In other words, there are no broken ends because of uneven tension on the beam, which is bound to occur where a big knot or bunch is made in the starting of the sheet of yarn on the loom beam. All ends have the same tension, and the loom will continue to weave first-quality goods right up to the very last. The amount of yarn that is left on the beam is about the right length to be cut out for the warp tying machine.

The loom fixer, in preparing the harness for the warp tying machine, should cut the yarn right near the peice of gummed tape that is being held in the loom beam by the stick, and the yarn divided into sections of about 12 inches, and tied up against the harness with a loose slip knot. The full beam that has been doffed with a piece of gummed tape across the entire sheet is sent to the warp tying, warp drawing machine, or drawing-in hand, and here it will be found that the piece of gummed tape on the yarn is of very great advantage. On the warp tying machine the flush clamps can be put on 3 inches or 4 inches back of the gummed tape, and the only waste made is about 6 inches, as the operator on the machine will cut the yarn just back of the piece of gummed tape, and the waste would be from that point to the 2 inches or 3 inches the other side of the gummed tape.

This not only is a great saving in waste over the old method, where the ends were tucked under the warp, but it is even a saving where slasher combs are used to preserve the sheet. The use of slasher combs in a sheet of yarn at the slasher, instead of the gummed tape, gives a good sheet of yarn to work on, either for the warp tying, warp drawing machine, or the drawing-in girls, but the use of these combs is expensive, for if the beams are piled or rolled on the floor, the combs and backs are bound to be damaged. The use of the gummed tape is cheaper, and much more satisfactory in the long run.

The writer understands that the tape moistening machines, which can be fastened on, one to each slasher, can be purchased for $5.00 apiece or less, and the gummed tape, either in 1 inch or 1½ inch widths, for around 25 cents per pound. Ordinarily the 1 inch width is sufficient for warps that are not of too high sley, and the 1½ inch width is used on worsted warps or cotton warps of coarse numbers. The 1 inch width is better for the finer counts.

For use on the warp drawing machine the beams prepared with the gummed tape are very satisfactory, as the clamp is put on just ahead of the gummed tape, after which the ends projecting through the clamp are cut off close to the tape.

Where hand drawing-in is done, a comb can be inserted very accurately, placing the comb in the sheet of yarn as near to the gummed tape as possible.

The writer, in his visits to mills covering a period of years, has seen anywhere from one to ten yards wound off from a beam where neither the gummed tape or comb

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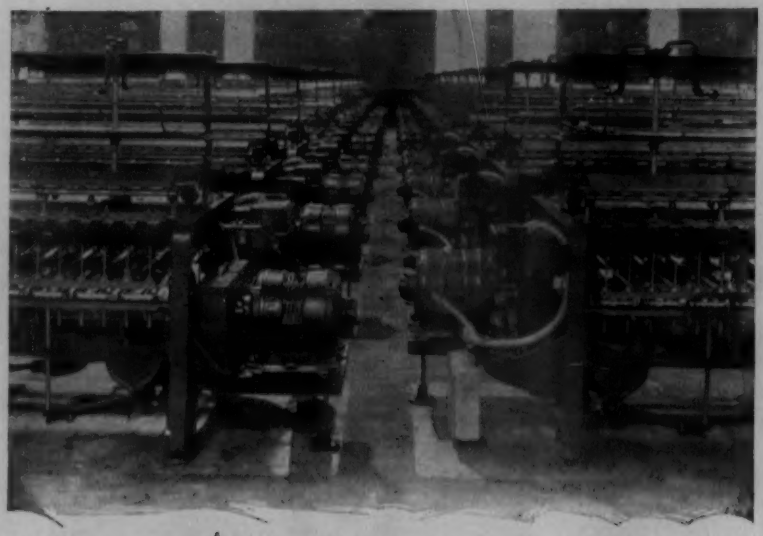

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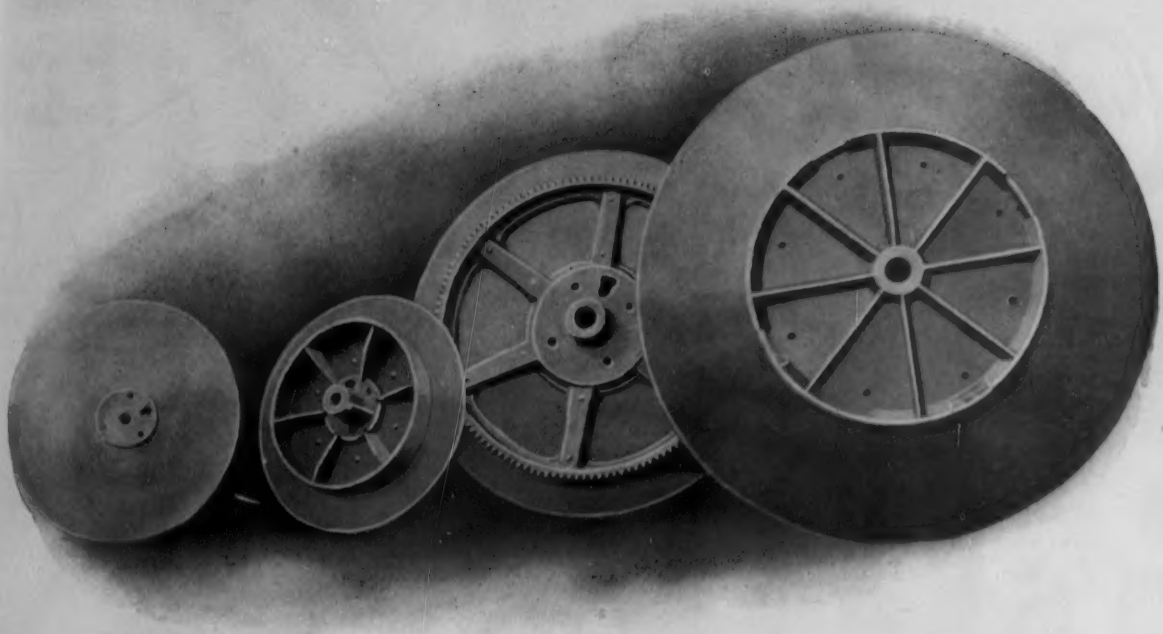

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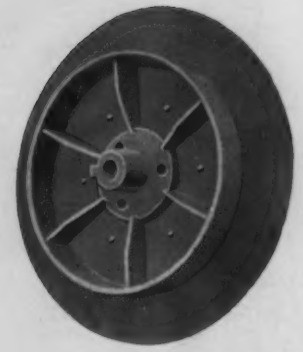

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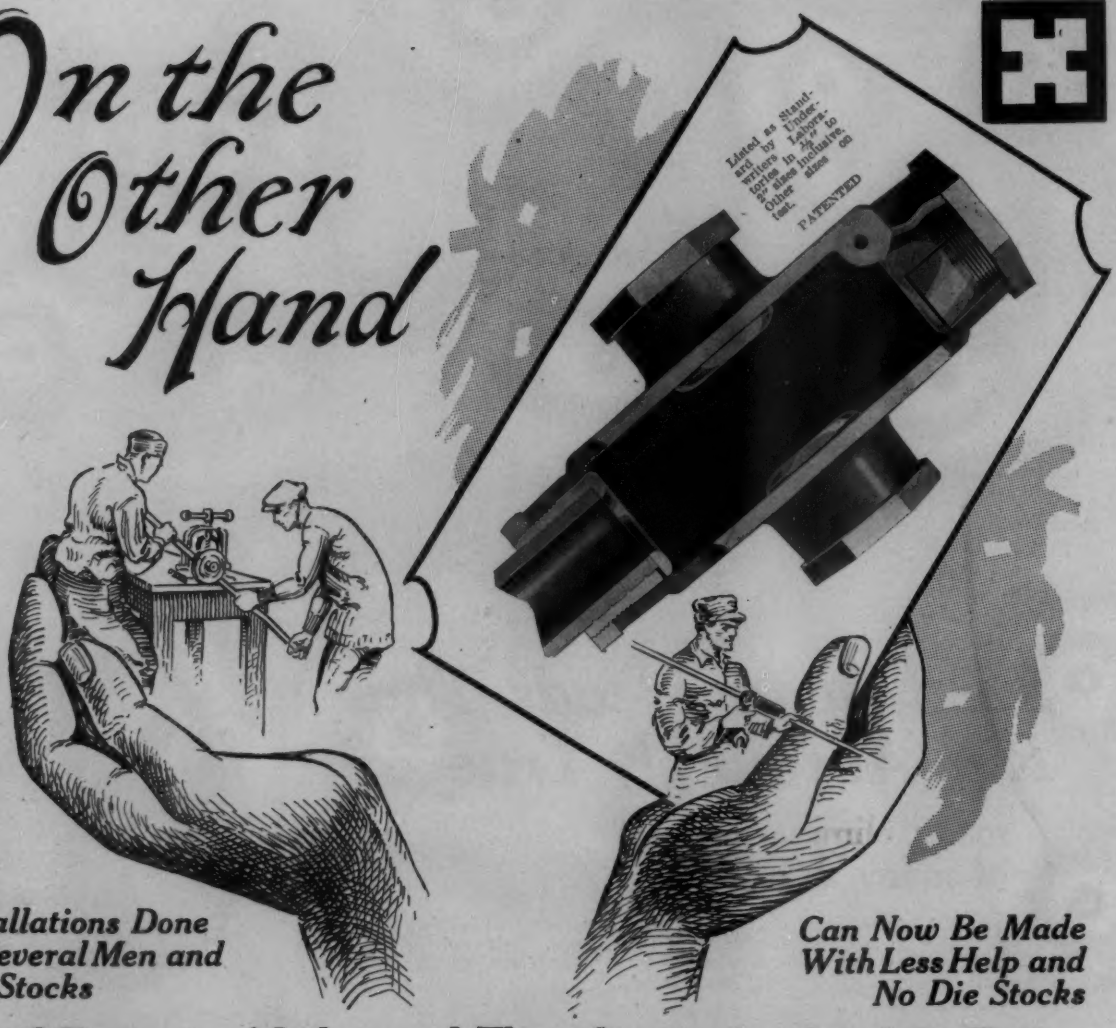

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was used, but the ends tucked under the warp. It was necessary to wind off this amount of yarn so that an even sheet could be obtained to permit the warp tying or warp drawing machine, or even the drawing-in hand to get a satisfactory sheet of yarn from which the ends could be selected.

The use of combs, of course, reduced the amount of waste, but there is the expense of the combs to be considered. The use of the gummed tape started in a small way, and it is surprising that its use was not more universally adopted a number of years ago. It is the writer's observation that most mills are now equipped with some sort of tape moistening machines. Some mills use only a home-made reel to hold the tape, moistening the gum with a sponge which is kept in a shallow tin can. Others have devices which are fastened to the slasher, and this, of course, is the most satisfactory manner in which the gummed tape can be put on. The writer has seen circulars which the Barber-Colman Company sent out, advocating the use of the gummed tape, and showing how it could be applied. The returns in saving of waste are so great for such a small investment that no doubt in time all mills will be using this system. A. R. (MASS.)

Causes and Remedies of a Wavy Twill Line.

EDITOR COTTON:

In the March issue of COTTON "P. W. (Ga)." stated he was having difficulty in weaving regular three-harness drills and four-harness twills. He is getting an irregular or wavy twill line and wishes to know the probable causes of this defect and the remedies for them.

There are a great number of things that will cause an irregular twill line. I will name the more common of them and I feel quiet sure that "P.W." will find that one of them is causing his trouble.

If the filling is irregular he cannot expect to get a good straight twill line. I believe that is self-evident. The only remedy for this is to use a higher grade filling yarn.

Too light a lay is often the cause of a wavy twill line.

If a reed is used that is much too coarse the twill line will be very poor. However this is not a very common defect.

Sometimes the bearings on the crankshaft get badly worn, this allows the lay to have a little play in it, which will help to cause a wavy twill line.

Irregular beaming may also help to cause a very poor twill line. By irregular beaming I mean that one end on the beam may be longer than the end laying next to it. This end will be looser in the shed. In the woven fabric the floats of this end will tend to be just a little longer than those of the ends under greater tension. The only remedy for this is more care in the warp preparation.

One of the commoner causes is a slipping of the take-up motion. If the number of picks per inch vary, the angle of the twill will vary. If we have two or three picks pushed up close together, then we have two or three more placed quite far apart and so on, the effect will be small waves in the twill line. The floats over the ends that are close together will not be as long as those over the picks that are farther apart.

The warp tension not being constant will give the same effect. On looms that have automatic let-off motions on them this defect is not so likely as on the old type looms with a friction let-off motion. For on looms that have a friction let-off motion, if the beam ends, over which the friction ropes or chains run, are worn the beam will turn in little jerks giving anything but a constant tension on the warp. If this is the difficulty all the beams should be gone over thoroughly. They should be turned down in a lathe and carefully balanced so that one side is no heavier than another.

L. A. S. (MASS.)

EDITOR COTTON:

In answer to "P. W. (Ga.)" on uneven twills in three and four harness drills, will say that I think he has his whip roll and sand roll too high, or possibly his lay pulled too far forward.

On ordinary plain or basket weaves this setting is necessary to produce a good face, but on twills the reverse is true. In order to bring out a clear even twill both shades of yarn must have an even tension when the harness is open. I would recommend setting the reed 3-inches or 3½-inches from the fell of the cloth when the two front harnesses are level.

I trust this will solve the trouble which "P. W." is having.

F. J. (S. C.)

Causes for Carding Troubles.

EDITOR COTTON:

It is certainly surprising to a practical careful mill man that so many manufacturers allow their cards to degenerate into such slip-shod imperfect condition. Superintendents and carders often seem to consider that a card which is running and producing a fairly good web requires no more attention, when as a matter of fact, the card may be radically wrong in various ways. This, I believe, is due to the fact that most of the action of a card cannot be seen or the results of imperfect conditions noted immediately. Much of its work can be ascertained only in the finished yarn—its break, evenness and quality, and some mill men do not trace the yarn's defects to the card. Let us consider some of the points I have found to be often neglected.

The little brushes that clean the ends of the flats are very often worn out or set so that they do not even touch the flats, to say nothing of pressing on them and cleaning them. This is a very common fault. The flats in passing over the sprocket wheels keep their ends fairly clean, but even the smallest amount of dirt will throw the setting of the flat off. I have seen bunches of dirt so big that a third of the flats could not be set closer than a 24 to the cylinder, and the grinder would select another flat in re-setting, thinking the card was worn out or out of true. This is a simple point, with a simple remedy, but any mill man realizes the importance of having all the flats set right and doing full work.

Another very often neglected detail is the setting of the cylindrical flat brushes. The bristles should not touch the foundation cloth, for if they do, the bristles will draw the dirt, waste and bunches through the wire and embed it deeply in the wire. After a month or so the grinder will be forced to use the wire brush roll to remove them, and then of course the points are rubbed off the wire and their

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edges rounded, and no grinding can replace the edges. Flats filled with waste and deeply embedded bunches certainly give a very slack and dirty appearance to the card room.

Some mills use humidifiers in the card room that throw a spray of water directly on the flats. This is a very bad policy, as the flat wire is soon rusted and then no amount of cleaning with the burnishing roll will keep the dirt out of the flats. I have found that a piece of tin under such humidifiers can be bent to throw the spray higher in the air or in another direction without in the least affecting their usefulness.

The use of steam to kill static electricity, although not as prevalent as a few years ago, is still in common use in some sections. This does untold harm, for the wires of both flats and doffers become rusted to such an extent one can often find bare spaces of several square inches. The only remedy for this evil is the removal of the steam from the room, and having the static destroyed by heating the room an hour or so before starting time. This of course burns more coal, but with the price of card clothing so high, coal is much more economical in the long run.

Then the condition of the grinding rolls is very often bad. Every carder knows the necessity of having good clothing on his rolls and the worn condition of them in so many mills shows actual neglect and carelessness. Rolls with the emery worn down not only polishes the wire instead of sharpening, but it also does not give the sharp hiss by which the grinders set the roll, with the result that they set too hard and so utterly ruin the wire points. I have seen stripping rolls set so low they tore the foundation cloth, but this is probably not a very prevalent condition.

Another fairly important point, often long neglected, is the condition of the cylinder bearings. Even those cards that have detachable bearings are sometimes never cared for in this respect. A worn bearing of course throws the cylinder out of true and makes inexact settings. I have known carders to raise one side of the card when this occurs, but at best this is a questionable makeshift, for it simply causes the weight to be thrown on the opposite bearing, eventually wearing that one also.

I have seen card tenders filling their palms with oil and rubbing them on the doffers on cold mornings to kill the static. Later, of course, as the wires become oily, whiting it applied. This not only plugs the wires with dirt, but also rots the cloth.

Nothing is more disturbing to an honest mill man than to go into a card room which sounds like a boiler factory, due to the fact that the comb eccentrics are loose. On almost every make of cards the pawls and forks of the combs can be adjusted to prevent this, and when worn, they should be removed.

A great source of danger is the oil often seen on the floor under the comb boxes. This can be prevented, although many carders think otherwise. Personally, I prefer to use a medium weight oil, but whether a man uses non-fluid or thin oil there is no necessity for oil on the floor. If the oiler is not putting in too much oil the trouble lies with the oil box itself, most often due to the plugging of the return duct to the oil chamber by waste and dirt.

These points, although having no very perceptible bearing on the appearance of the web certainly do affect the

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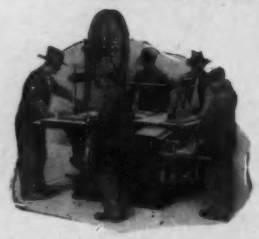

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D. P. T. (N. H.)

Oil Spraying and Cork Rolls.

EDITOR COTTON:

I should like to see a real good article written by a man who is using the oil spray system, one who will tell us the advantages he gets from using this system. I want information giving facts, facts that will stand the closest inspection. I don't consider any man competent to give these unless he has actual experience, and has followed up the results so he can quote his findings in the entire carding department, and as to how it affects the work at the different processes. Then go to the spinning department. There must be some difference with or without the oil? Now what is it? And in whose favor?

"Wash" came out about the cork rolls this past issue, and I back him up in all he says regarding the staying qualities of the cork rolls. But I found it will not do to have too much moisture in the room, as they will start to lick up worse than leather covered rolls, as it is known that leather will absorb moisture, whereas cork will not. Again, if good results are expected, the cork rolls must be kept clean, owing to the fact that every little particle of oil and dirt will ride the surface. I am now replacing leather rolls as fast as they give out, but only after I had tried the cork rolls for six months and studied the peculiarities of the cork covering.

O. T. (N. C.)

Making Better Yarn.

EDITOR COTTON:

Answering the letter by "Contributor No. 1019" published in the December, 1926, number of COTTON, I will say, to start with, that he is very fortunate in having 1 5/16-inch cotton to use. I cannot see that there is anything gained by speeding up the flats. It is true that more waste will result, but it will be clean waste. No greater percentage of dirty strips will be taken out.

The 18-ounce lap on the breaker with three on the finisher, producing a 12¼-ounce lap, gives a draft of 4.4, which is okeh. But why double three? Surely doubling four would give evener work and cleaner work and would cost not one cent more.

He has a big draw back in having 45-inch cards, however, he has "cream" at that. A 12¼-ounce lap to 50 grain sliver gives a draft of 118, which is ideal. The longer the draft on a card the better the work. However, I would advise him to slow his flats down again and set closer. Set to a .007 gauge. This will make the work come cleaner. I would set the knives a little closer, say .012 top and .010 bottom. Eight hank is stnadard for 40s. As he does not give the preceding processes I cannot tell if it is okeh. I think the impurities come from the wide setting on the card. His work is light and will do well under close setting. His production of 300 pounds in 48 hours would mean a doffer speed of approximately 5 r.p.m. I think he is very fortunate in being able to run that speed.

The portions of yarn with twist in it must either be

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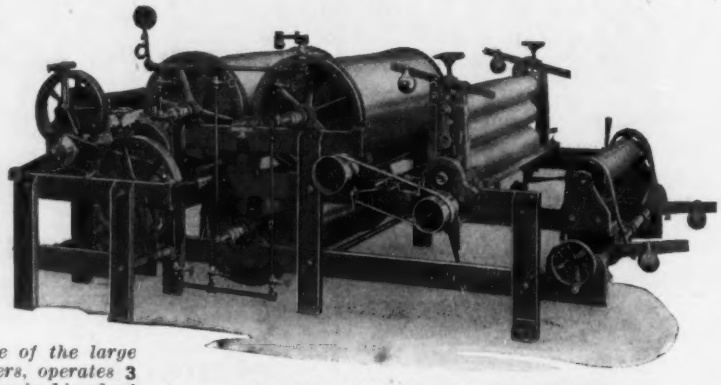

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caused by some excessive roller drafting or by rolls not oiled, and therefore lagging.

If I could run 40s out of 1 5/16-inch with a doffer speed of 5, I would feel that I was privileged.

In conclusion, I will remind you again—slow down the flats; set closer; check up on drafts and rolls, on drawing and fly frames. CONTRIBUTOR No. 559.

Those Fly Frame Problems.

EDITOR COTTON:

In the May issue of COTTON last year "Rex (R. I.)" attempts to answer my article entitled "A Fly Frame Problem" which appeared in the January issue. In the August number "T. A. A. (S.C.)" and "C. C. (N.J.)" give their answers. All these writers failed to answer the questions included in the first and fifth paragraphs of my article.

My object in writing that article was to draw opinions from the defenders of the bobbin-lead system, and evidently the scheme worked.

What are the fundamental principles of a modern fly frame? On all bobbin-lead frames, the surface speed of the front roll and the excess surface speed of the bobbin over the flyer should be equal. This has been the almost universally accepted theory for many years. Surely there is no trace of these principles in any of these answers. "Rex" does not even mention it. "T. A. A. (S. C.) gives us a great amount of useless figures and why? Because to figure the foregoing principles you must know the diameter of the front roll and its speed, also the diameter of the bobbin.

Turn again to my article and you will find that I stated. "With this change we find the tension is slack, and must be tightened about every fourth layer until the cone belt is at a point say about four inches from the starting point," which proves that "T. A. A." is no thinker, for if he had the thinking habit he would not overlook the chief defect of the bobbin-lead fly frame, which is the slippage of the cone belt.

Some correspondents have had a lot of fun about the questions I asked in the January, 1926 issue of COTTON: "Change compound pinions from 16 to 14 teeth. What changes should be made to make conditions equal, and what effect does the change make in the lateral movement of the cone belt, and also the working area of the cones?"

Again, let us assume that owing to a radical change in the hank roving we are forced to change the compound pinion from 20 to 18. This you must admit, would reduce the speed of the bobbin, and would also cause a necessarily smaller lateral movement of the rack at each completion of the carriage. What effect does this change have on the parabolic curves of the cones? I should like to ask if "C. C." remembers.

In the 17th paragraph of his article he states: "As the bottom cone gear is a driver, and the gear was changed from 19 to 24 teeth, this drives the shaft faster that runs to the twin gears. This caused the twin gears to speed up, which would naturally result in greater speed to the rail, causing less lays per inch to be laid on the bobbins."

He overlooks the position of the cone belt from the extreme end of the bottom cone to a point laterally 3½ inches.

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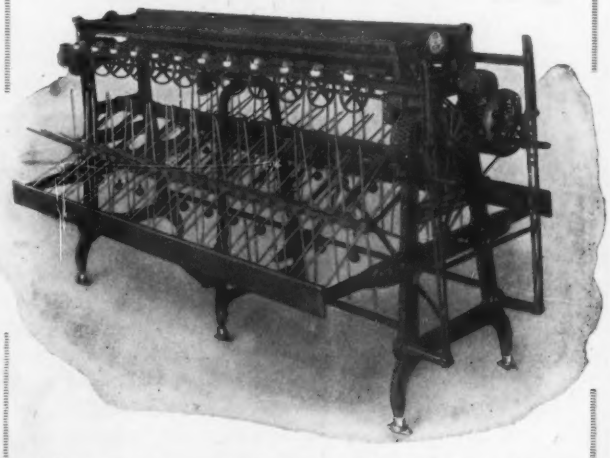

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One of my questions was "What effect does the foregoing changes have on the parabolic curves of the cones? No doubt many readers thought the question just a bluff, but I don't bluff. The following will prove that the question is not a foolish one, but one that will enlighten the student of fly frames, and cause him to be careful in making changes.

Now, with the two questions in mind as regards the changing of the compound pinions, study the following: It was found that if a bobbin increased in diameter from one-inch to 1⅛ inches, the proportionate increase was 1/9th part of the total, but if the bobbin increased from 3⅞ inches to 4 inches the proportionate increase was only 1/32nd part of the total diameter. So it was clearly realized that the equal increase of ⅛-inch in diameter of the bobbin was only in addition, and was very unequal in proportion.

To obtain the intermediate speeds, the cones were considered as a continuous string of pulleys connected together, and in finding their true outline, each layer added to the bobbin was considered separately, and the diameter of the cones figured for that layer alone; the result was a concave upper cone and a convex bottom cone, which gave the cones their peculiar formation the most essential feature of the cotton roving frame.

From the foregoing it should be seen that the outlines are not found by equations. (1) Because there are too many factors that create unequal conditions. (2) A parabolic curve means a plain curve of such form that if from any point in the curve one straight line be drawn to a given fixed point, the other perpendicular to a straight line given in position, these two straight lines will always be equal to one another.

If "C. C." is right, then a variation in the speed of the carriage alters the taper of the bobbin. See the point?

WASH (R. I.)

Progressive Card Settings.

EDITOR COTTON:

One thing that seems to cause discussion in COTTON is progressive settings. The article by "C. C. (N. J.)" has tempted me to enter the discussion. Most people in writing about this state (or infer) that short stapled cotton does not need the care that long stapled cotton does. This is all wrong. I can't help but believe that most of these men work in coarse or print cloth mills. If they had ever worked in fine mills they would know.

We are accustomed to running fine combed goods. Sometimes we have to take an order on carded work with coarser counts, and know from experience that the carding needs A-1 care and not B-2 care. The carding must be perfect if our reputation is kept up. There is too much of a tendency to let the cards go slack and make the combers clean the work, but this shows up in extra needling cost.

Returning to progression, it is all wrong. For one reason, to get the cleanest work, one must set as close as possible. When the settings are varied they are not as close as possible. On a 40-inch card this should be set to a .005 gauge to get the cleanest work. To do this two gauges must be used. Set to a .007 tight, so that the .005 just goes through. It cannot be done with one gauge. No two men have a touch just alike. I do not advise letting a grinder set the flats close. In fact, an overseer should set the flats anyway. The average grinder will not do what he is told after the overseer turns his back. Start the card up backwards and listen. Anyone who starts his cards up backwards and listens will never have a card faced.

"C. C." states that by setting close, grinding is needed oftener. I take exception to this. What makes excessive grinding necessary is the use of the burnishing brush. The only safe place for this brush is either under lock and key or in the dump. It smoothes up the wire so that the flats cannot grip the fibers that should be taken out.

He also writes about the "feel" of a gauge. He may be able to "feel" the same every time, but can he hire a grinder he can trust to "feel" as he "feels." I have never seen one yet. The man who has brains enough to think about settings usually has more ambition than to be a grinder.

His reference to rolls leads me to a question. Have any of your readers used any of the Jetrol leather rolls? Made for anything but detaching rolls. I have run them on ribbon lappers, draw-frames, draw-boxes and slubbers and have seen them on spinning frames. So far they have run to perfection. They never roller lap. I have run them about nine months now, so do not know how they will stand up. They have a smooth black surface and never need varnishing. In fact, varnish would not stick to them. Has anyone else tried them?

CONTRIBUTOR NO. 559.

Lease Large Space in Textile Center.

The factoring organization of Peierls, Buhler & Co., Inc., now at 260-266 Fourth Avenue have signed a lease for a large amount of space at No. 2 Park Avenue in the district more definitely stamped as the textile heart of the city centering on 34th Street east of Fifth Avenue. This lease will take effect February 1st, 1928. They will occupy the first three floors and part of the basement of this new building, now under construction. The area of each floor is 40,000 square feet.

STATEMENT

of the ownership, management, circulation, etc., required by the act of Congress of August 24, 1912, of COTTON, published monthly at Dalton, Ga., for April 1st, 1927.

State of Georgia, County of Fulton.

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared W. J. Rooke, who, having been duly sworn according to law, deposes and says that he is the Business Manager of COTTON, and that the following is to the best of his knowledge and belief, a true statement for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, W. R. C. Smith Publishing Co., Atlanta, Ga.; Editor, L. L. Arnold, Atlanta, Ga.; Business Manager, W. J. Rooke, Atlanta, Ga.

2. That the owners are: W. R. C Smith, Atlanta, Ga.; W. S. Cushion, Cleveland, Ohio; O. A. Sharpless, Atlanta, Ga.; J. C. Martin, Atlanta, Ga.; H. H. Kelley, Atlanta, Ga.; W. J. Rooke, Atlanta, Ga.; T. W. McAllister, Atlanta, Ga.; P. D. Hammett, Chicago, Ill.; A. E. C. Smith, Cleveland, Ohio.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or any other security holders are. None.

4. That the two paragraphs next above giving the names of the owners, stockholders, and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting is given; also that the said two paragraphs containing statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bonafide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

W. J. ROOKE, Bus. Mgr.

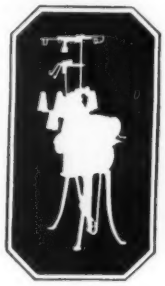
Sworn to and subscribed before me this 24th day of March, 1927.

E. L. PHILPOT, Notary Public.

My commission expires March 5, 1931.

"Don't put things off—put them over."

Knitting Section



RECORDS have a significance for the investigator into industrial efficiency, a preliminary in the purchase of knitting machinery. Consider the record of Scott & Williams, Inc.: sixty-two years of experience in manufacturing machines which have satisfied a necessarily exacting industry; the constant introduction of improved types of machines; the continual demonstration of a willingness, and an *ability,* to satisfy you.

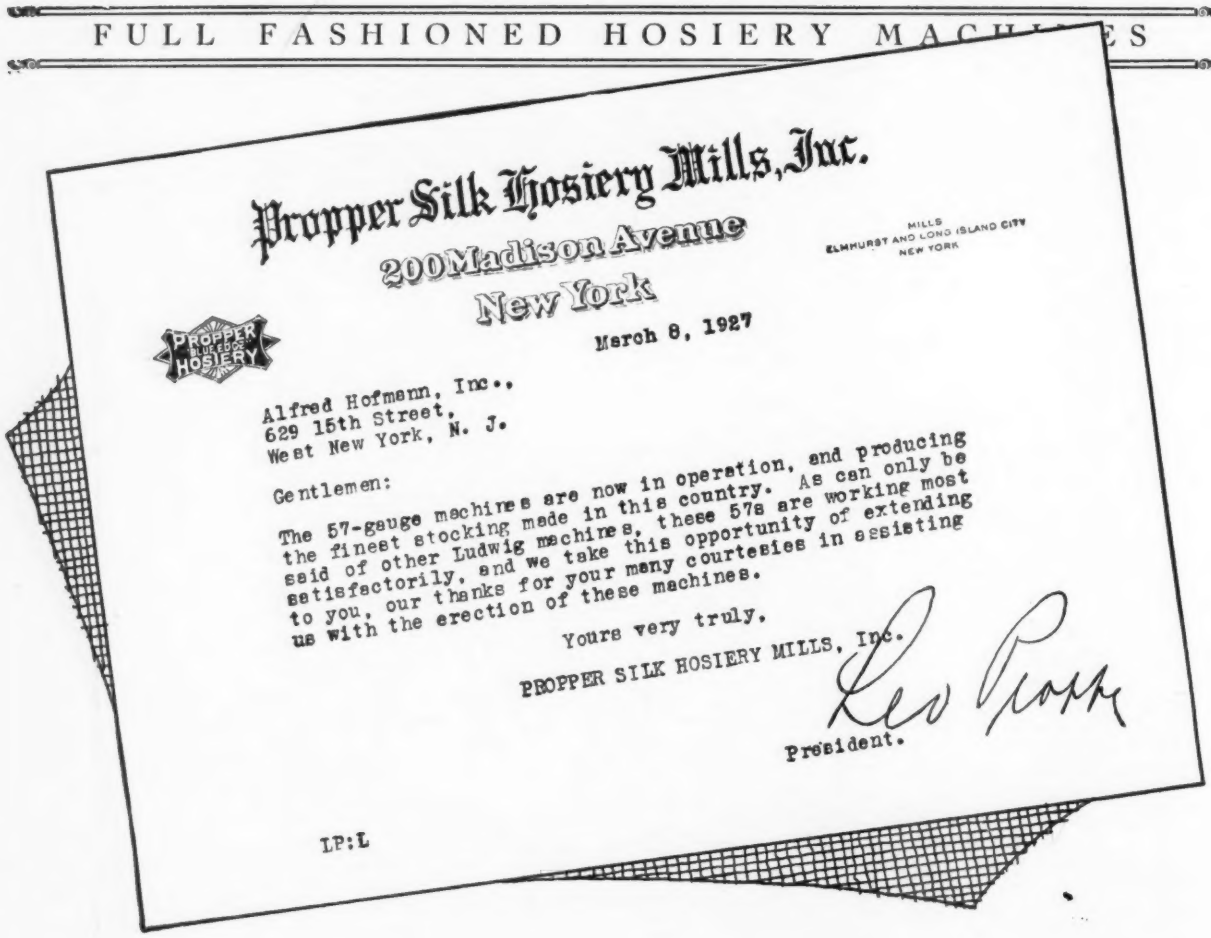
Established 1865

SCOTT & WILLIAMS

Incorporated

366 Broadway, New York

FULL FASHIONED HOSIERY MACHINES


Propper Silk Hosiery Mills, Inc.
200 Madison Avenue
New York

MILLS
ELMHURST AND LONG ISLAND CITY
NEW YORK

March 8, 1927

Alfred Hofmann, Inc.,
629 15th Street,
West New York, N. J.

Gentlemen:

The 57-gauge machines are now in operation, and producing the finest stocking made in this country. As can only be said of other Ludwig machines, these 57s are working most satisfactorily, and we take this opportunity of extending to you, our thanks for your many courtesies in assisting us with the erection of these machines.

Yours very truly,

PROPPER SILK HOSIERY MILLS, Inc.

President.

LP:L

57! THE FINEST SILK HOSIERY IN THE WORLD

THIS Schubert & Salzer, Type A. L. machine for knitting 57 gauge silk hosiery is of necessity very intricate. This calls for the most carefully conceived principles of construction plus the utmost care in workmanship and assembling.

All machines produced by Schubert & Salzer are built and assembled with the same painstaking care.

The letter reproduced above is strong and unbiased evidence of the satisfaction which these machines are giving. The other types of Schubert and Salzer Full Fashioned Hosiery Machines are Type S. & S., and Type H. S. L., both of which are as heartily endorsed by users as the Type A. L.

Ask the man who operates one.

ALFRED HOFMANN, Inc., WEST NEW YORK, N. J.

National Association of Hosiery and Underwear Manufacturers Convention

During the past few years, each successive annual convention of the National Association of Hosiery & Underwear Manufacturers has demonstrated a distinct improvement in the operating service and efficiency of the organization, and the convention held in Philadelphia on Wednesday, April 6th, during the Knitting Arts Exhibition, served further to indicate this increasing progress.

The program of the meeting, in keeping with the arrangement for several years, was short and concise, consisting of one brief session, but its brevity and studied effectiveness revealed more clearly the active organization behind the Association, through which the service feature is emphasized throughout the entire year.

Executive officers were re-elected for the coming year, the following men being returned by unanimous vote to their respective officers: D. L. Galbraith, American Textiles, Bay City, Mich., president; J. O. Wells, Cooper, Wells & Co., St. Joseph, Mich., first vice-president; J. B. Lesher, Unrivaled Hosiery Mill, Williamstown, Pa., second vice-president; and Ernest Blood, True Shape Hosiery Mills, Philadelphia, treasurer. John Nash McCullaugh, up until this year the efficient National Secretary and Industrial Manager, was given the title of Managing Director. W. Park Moore, and George F. Dickson were re-elected as members of the board of directors, and two new members were added—Richard Sulloway, Sulloway Mills, Franklin, N. H., and H. F. Gwinn, Cadet Knitting Co. Philadelphia.

The meeting was called to order on Wednesday morning by President Galbraith, who introduced Treasurer Blood for his annual report. Mr. Blood reported the Association in splendid financial condition, with a balance at the end of 1926 of $35,740.27, more than $5,000 more than the 1925 balance.

During the year, Mr. Blood continued, "the Association handled claims and collections for its members amounting to $1,316,857.24. The greater part of this money was collected for the membership of this Association without any charge whatsoever to its members.

"The Credit Department of this Association, still functioning as it does in the matter of employing outside investigators as well as using membership experience, passed credit during the year for its members on 5,137 credit inquiries.

"During the year, the Association issued its Third Credit Rating Book on the knit goods jobbers of this country. The fourth one is now in the process of preparation. This book, as our members know, covers the ledger experiences of the greater number of hosiery manufacturers in this country, in their relation to the method of payment and the ethical actions of over 2,200 jobbing accounts.

"The membership of this Association is higher today than it was on the first of January 1926. The policy of non-solicitation is still being followed by the Association, as it has been for the past five years. This membership showing I believe to be unusual in view of the fact that the year of 1926 witnessed the passing from the hosiery and underwear industries of over 61 manufacturers." '

Report of Research Committee.

Research has occupied a prominent part in the Association's activities during recent years, and for this reason the report of George F. Dickson, Minneapolis Knitting Works, Minneapolis, Minn., as chairman of the research committee, is of especial interest as indicative of the service rendered in this connection. This report was next called for by the president, and Mr. Dickson said, in part:

"During the year, the Association completed, through its Research Fellowship in the Bureau of Standards in Washington, D. C., its study on standardization of lengths as they affect men's women's, misses' and infants' three-quarter and seven-eighth length hosiery.

"The Research Fellowship also established a maximum

D. L. Galbraith, Re-elected President.

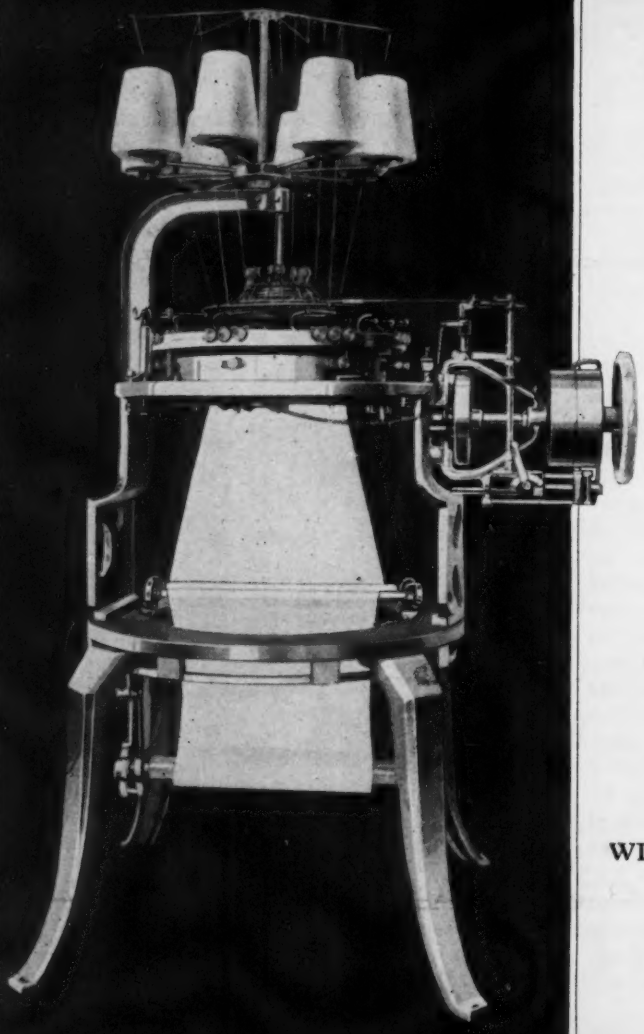
precentage of oil in rayon yarns—this percentage having been accepted by the Association, i.e., six per cent. In a previous study, the Association had arrived at the standard total moisture content of rayon yarns, making the maximum percentage of oil and moisture in rayon yarns eleven per cent.

"The Association also finished a study on folded seven-eighth's cuffs. At the present time, the Research Fellowship of the Association is working on a standard lubricant for machines used in the knitting industry. The fellowing standard studies are still under consideration by the Association:—

Moisture and Regain in Mercerized Cotton

Moisture and Regain in Combed and Carded Yarn

"As you all know, the Research Fellowship of this Association was installed in the Bureau of Standards on the first of January, 1923. Since that time, there have been handled for members of this Association, 2,135 problems, effecting every branch of the knitting industry. I would like to emphasize, for the benefit of the members of this



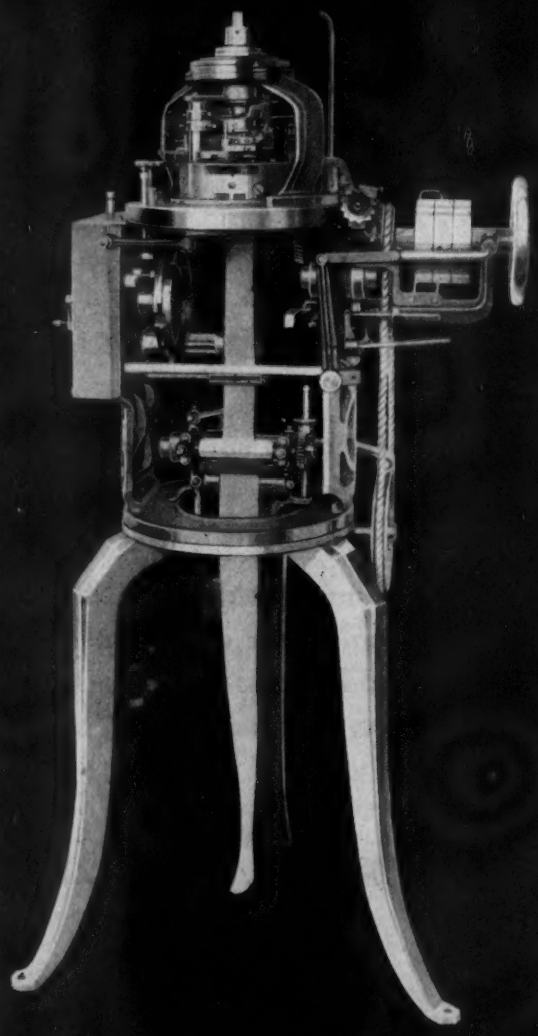
Wildman
has already
solved
that
problem

WILDMAN
THE WORLD'S STANDARD

WILDMAN MANUFACTURING CO.
Norristown, Pa.

We have issued a new edition of the complete and informative book, "The Science of Knitting." Price $2.00.

WILDMAN
SPRING NEEDLE BODY MACHINE



You can't
afford
not to
Wildmanize

WILDMAN
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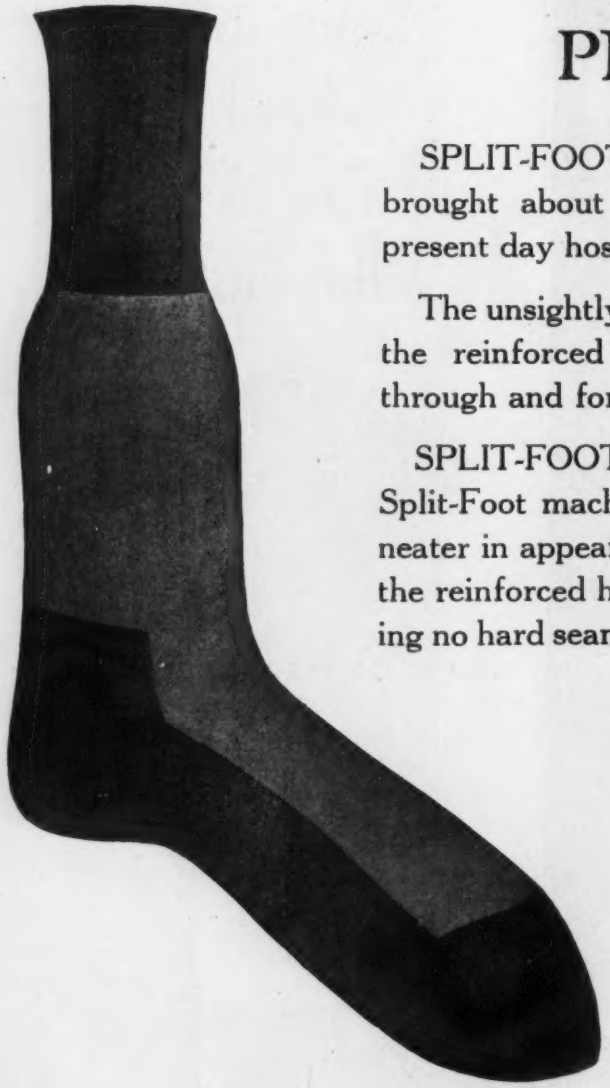
Norristown, Pa.

We have issued a new edition of the complete and informative book, "The Science of Knitting." Price $2.00.

WILDMAN
CIRCULAR RIBBER

The "BANNER"

SPLIT-FOOT PRODUCT



SPLIT-FOOT HOSIERY, the new creation, brought about by the main disadvantage in present day hosiery, namely:

The unsightly inside fringe of splicing ends in the reinforced portion which tends to slip through and form whiskers on the outside.

SPLIT-FOOT hosiery made on "BANNER" Split-Foot machines is smoother on the inside, neater in appearance and has added strength at the reinforced high splice and double sole, having no hard seams.

WHY MAKE AN INFERIOR PRODUCT?

WE INVITE INQUIRIES

HEMPHILL COMPANY

Main Office and Factory

PAWTUCKET, RHODE ISLAND

New York Sales and Show Rooms
Knit Goods Bldg., 93 Worth St., N.Y.

Southern Office
James Bldg., Chattanooga, Tenn.

Philadelphia Sales and Show Rooms
Colonial Trust Bldg., 13th and Market Sts.

Association, that, while they know this service is given to the members of this Association free of charge, there is no organization or company competently equipped to handle problems of this kind in the United States except through the National Association of Hosiery and Underwear Manufacturers.

"The hosiery and underwear industry, suffering like all industries dealing with textiles from over-production, is confronted with the problem of idle machinery and equipment. In order to utilize this machinery and equipment, a study has been made of the best possible method that would accrue benefits to all our members, and, in this connection, the Association recommends for consideration by manufacturers in the hosiery and underwear industry, the following items that can be made on knitting machines:

"1. Bed spreads or counterpanes for small and large beds made from various classes of yarn dyed in various colors.

"2. Pillow covers made to match the bed spreads or counterpanes or made up as individual covers.

"3. Window and door draperies made from yarns to give two, three or more tone effects, using various types of yarns.

"4. Table pads made from soft cotton.

"5. Knitted cloth made from various types of yarns in various colors, this cloth to be used for boys' sport shirts.

"6. Bathing suits nowadays are made mostly of worsted, and as women are always fond of bright and lustrous colors, the suggestion is made of knitting bathing suits of a plaited or twisted acetate (lustron or celanese) artificial silk over a fine worsted or cotton yarn processed with acetate dope which will give the yarn a lustrous appearance, and make up well for women's and children's bathing suits. Acetate rayons have good water resistant properties and using a worsted or cotton as a core, giving strength, it is the belief of the Research Department that a practical and salable garment could be made.

"7. Knitted bathing wraps with rayon or rayon plaited over cotton and worsted hold possibilities in this day of fashion and desire for exotic colors.

"8. Children's rompers and two-piece suits which are to-day being made from woven cotton and linen cloths, could be satisfactorily made from knitted cloth, making the tubular cloth from artificial silk straight, or a mixture of artificial silk and worsted, or artificial silk and cotton.

"9. It is also suggested that underwear being made to-day could follow the style trend by running artificial silk at random with the cotton, and tinting.

"10. Washcloths can be made in many different ways and of various thicknesses, with shell-stitched edging, plain edging, scalloped edging, and using various colored threads.

"11. Cotton gauze or cheesecloth has always been a product of the loom. We can remember some time ago seeing gauze made on a coarse-gauge underwear machine; that is, the gauze was made by using the cylinder needles only.

"We have a survey of the quantity of this material used by the Government departments in order to give you an idea of its possibilities. The various departments, such as Army and Navy, use approximately 105,000 pounds of gauze a year. This gauze, of course, is made of an ordinary grade of cotton and bleached.

"We have knitted up a small piece of material on the ribber, using the cylinder needles only, to give you an idea. The thin part is made from 30s single yarn and the heavier part from 20s single carded cotton. In making gauze a very low grade of cotton can be used. We find the price ranges from .03 to .078 cents per yard. Of course, the price is representative of different widths.

"12. Dish toweling is also a very good commodity, and when made of knitted material it is, we believe, more absorbent than when made of woven material.

"13. Children's towels and bath towels made from knitted material would also make a very good article.

"14. Mothers, when bathing infants, always use some sort of a large towel or cloth on their laps when drying the child. Such cloths made of knitted material with colored fringes would also be very good.

"As a matter of suggestion, the wash cloths, towels and lap cloths assembled in sets would make a very good seller.

John Nash McCullaugh, Managing Director.

"15. Laundry bags are usually made from woven materials, but we believe they could very well be made from knit materials, using either a straight cotton yarn or an artificial silk and cotton yarn.

"16. Wiping cloths are also used in enormous quantities. A wiping cloth from knitted fabric is more absorbent, softer, and produces better results than one made of woven material or even cotton waste.

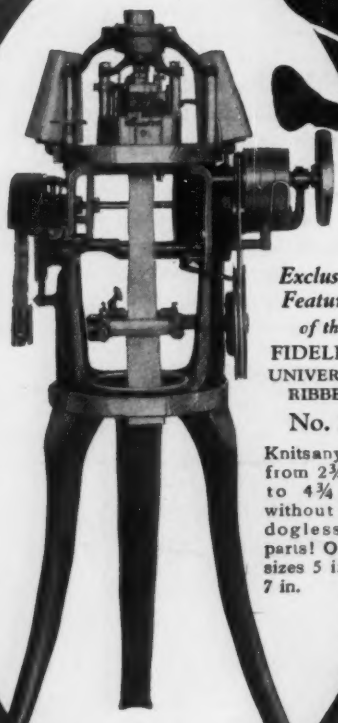
"17. Floor mops are also made in large quantities. Making up mops of various thickness of knitted materials of very low grade yarns should give a very satisfactory article.

"18. Pads for ironing boards would also give more efficient results made from knitted materials than from woven material.

"19. Iron holders or holders for removing hot dishes from the oven or handling hot utensils on the stove would also find a good market, we believe.

"The Industrial Manager of this Association has been instructed by the Board of Directors to secure a practical knitter to work on this subject. In addition to the knitter, a stylist will be called upon to guide this knitter in the matter of styling the merchandise above referred to. Samples will then be knitted in the Association Laboratory and forwarded to members in finished form, with notations as to

Stamina!



Exclusive Features of the FIDELITY UNIVERSAL RIBBER No. 3

Knits any size from 2¾ in. to 4¾ in. without new dogless or parts! Other sizes 5 in. to 7 in.

ALL the production "punch" that is demanded in ribbers today .... All the mechanical precision that makes for smooth, steady service ... All the strength that will stand the test of long years of gruelling use ... In fact, everything that makes for perfection is incorporated in the new Fidelity design.

FIDELITY
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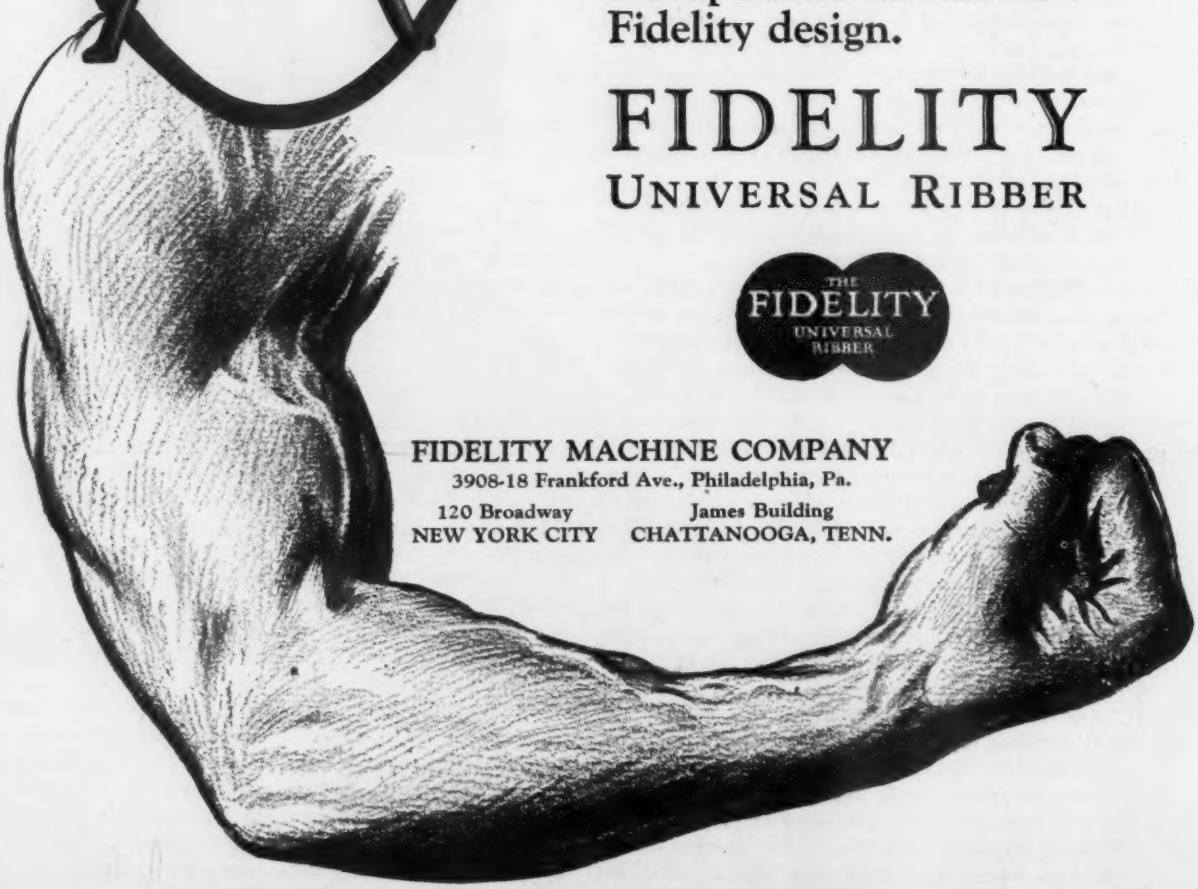
THE FIDELITY UNIVERSAL RIBBER



FIDELITY MACHINE COMPANY
3908-18 Frankford Ave., Philadelphia, Pa.

120 Broadway NEW YORK CITY

James Building CHATTANOOGA, TENN.

yarns used and all information pertaining to the garments above referred to, as well as other garments that will be developed. It is the hope of this Association that this work will be in full swing within the next six months."

Report of the Legal Committee.

J. Ogden Wells, as chairman of the legal committee of the association, made the next report. He recounted the work of this committee in the way of sales contract adjustments, etc., and also explained the action taken with reference to the Mercerizers' Association of America. He said in part:

"A review of the legal activities of this Association for the past year shows that eleven cases of arbitration, involving $285,719.84, passed through the Association office. In no case did the disputants appeal to the courts from the arbitrator's rulings. Three law suits were brought by this Association, at its own expense, in the matter of sales contracts for its members during the year. In each case the question arose between the jobber and manufacturer due to the decline in the market price of 20-inch boot hosiery. In each case, the contract given had specified that details as to sizes and color were to be furnished to the manufacturer by the jobber within a specified time. The courts ruled that the failure of the jobber to comply with these specification dates constituted a breach of contract. Your Association in each instance had a legal assignment of the claim made to its Industrial Manager. He, in turn, sold the merchandise in question for the best price available in the open market, and sued the breaker of the contract for the monetary loss sustained by our member. In each of these cases the Association won its suit and no appeal was made from the verdict of the lower courts.

"Over a year ago, when the manufacturers of hosiery and underwear in England started to advocate a higher protective duty on cotton hosiery and underwear, your Association employed counsel and representatives in England to combat the propaganda that was issued and to fight against the enactment of any tariff bill that would close the English markets to our cotton hosiery and underwear manufacturers. Please do not think that we are trying to take the credit for the failure of the enactment of this legislation in England, However, we do believe that in our small way we again proved that we were protecting as best we could the interests of our members. We believe it needless to state that the victory was for this industry.

"In the early part of October 1926, the attention of this Association was called to a new organization, known as the Mercerizers' Association of America, comprising a membership of the following firms: Standard-Coosa-Thatcher Company, Aberfoyle Manufacturing Company, American Yarn and Processing Company, Dixie Mercerizing Company, Johnston Mills, National Yarn and Processing Company, and others. The president of this Association was told that a price-fixing agreement existed among the mercerizers. He immediately formed a committee of the following members of this industry: Grover Good, Globe Knitting Works, J. O. Wells, Cooper Wells Company, T. H. Johnston, Knoxville Knitting Mills Co., J. H. Rickman, Chester Knitting Mills, G. H. Curtis, The Allen A Company, Louis Heilbronner, Holeproof Hosiery Co., Henry Pope, Paramount Knitting Co.; J. B. Lesher, Unrivaled Hosiery Mills, and J. N. McCullaugh, National Association of Hosiery and Underwear Manufacturers, and requested that they attend a meeting in Chicago to talk this matter over. At the same time, and in a spirit of fair-mindedness and friendliness, the mercerizers were requested to attend the same meeting. At this meeting, after statements had been made as to what was being said in the matter of price fixing, the mercerizers informed the members of this committee that no such combination existed—that they did form an Association for the same relief that other manufacturers had formed trade organizations, i.e., compilation of statistical data, research work, uniform cost, etc. They assured the hosiery members of the committee that price-fixing was not a part of their program, and that no attempt along these lines was to be considered or would be considered.

"A resolution was passed at the meeting of the Board of Directors of your Association, held in this City at the Manufacturers' Club on Monday, April 4th, instructing the managing director to go to Washington the early part of next week and lodge a formal complaint with the Department of Justice and the Federal Trade Commission against the Mercerizers Association, said complaint to be based on facts as they relate to price-fixing in the Mercerizers' Yarn Association."

Address of the President.

The concluding address of the convention was the annual report of the president, Mr. Galbraith, who recounted the general activities of the Association during the past year. He spoke in part as follows:

"Before attempting to refer to the activities of the President of this Association during the last year, I believe it proper and befitting to review briefly for the benefit of our members what I consider to be the accomplishments of our organization since 1921, reflecting as it does credit to my predecessors.

"Tariff is one of the activities benefiting every hosiery and underwear manufacturer in the United States that this Association has been actively interested in as an organization for the last five years. Prier to that time it was customary for a group of hard-working interested men to form a committee, solicit funds, and carry on the necessary tariff fights with which the industry had to contend.

"In the last tariff act written, and the one under which we are now operating, your organization, without outside funds, secured the highest duty ever written into any bill on silk and rayon hosiery, and the same rate of duty on cotton hosiery and underwear as was placed in the cotton clause throughout the bill.

"In addition to this, when the infants' hosiery manufacturers found they were not full protected in this bill, your Association appealed to the President for a review by the Tariff Commission, and has carried on a fight in this matter for the last two years. The final outcome, of course, will depend on the President of the United States, as the Tariff Commission has already submitted their report to the chief executive of the country.

"The whole plan of association life has changed radically in the past ten years, as shown by the activities of successful and progressive associations.

"The idea of cooperation has practically been eliminated by reason of the intense over-production in all industries created by the war and resulting in intense competition among manufacturers. Our organization five years ago sensed this change of condition in Association activities as applicable to present-day methods of operation.

"The management of the Association at that time decided with the approval of the Board of Directors that our organization must be a Service Organization and at the

BLEACHERS!

"My bleach is better than yours."—

"How do you get that way?"—

"Well; my Solozone-white is fast

I do not injure the fibre.

I cut out Seconds.

My goods don't yellow.

They are soft and elastic."—

"You win; but mine costs much less."—

"Wrong again. Couldn't sell much if it did:

I'll turn out three lots to your one,

My labor is about one third,

So is my water and steam and

Cost of equipment—

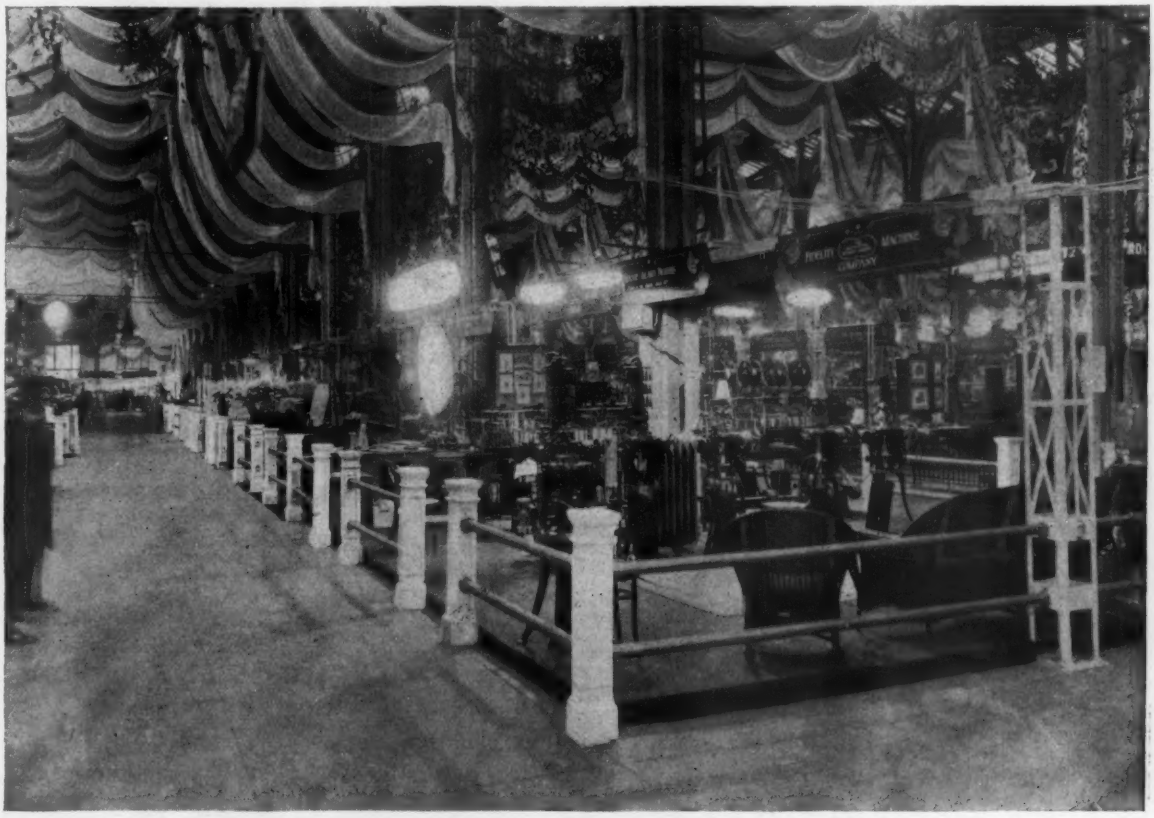
I bet we'll split even on cost."

THE ROESSLER AND HASSLACHER CHEMICAL COMPANY
713 Sixth Ave. New York

same time protect the industry in major problems affecting all manufacturers of hosiery and underwear.

"I feel today that no manufacturer will wisely spend money for anything upon which he is not receiving an adequate return upon his investment, and our Association can boast that every member on our books is using the services of our national office.

"I believe we have today, rather than a disorganized Association, a solid and concrete organization, representing practically every large manufacturer in the country, together with a great percentage of the smaller manufacturers. Furthermore, and what to my mind is extremely important, this organization has the respect of the trade in general.



A General View in the Exhibition Hall.

"This Association was the first organization in the textile field to establish a connection with the Bureau of Standards in Washingting, D. C., for the purpose of handling problems badly in need of standardization as well as research problems affecting its entire membership.

"The weekly *News Letter* of this Association has developed from a slip of paper to something that is read and appreciated.

"The *Sales and Service Bulletin*, issued weekly by this Association, offering manufacturers the opportunity of buying or selling without charge hundreds of various items, such as mill equipment, yarn, etc., saves our industry thousands of dollars annually.

"In other words, we have tried to follow a line of reasoning that was adopted, as stated previously, over five years ago, i. e., service and return to our members, and I frankly feel we have accomplished our object. Our dues are lower than those of any textile association in America. Our surplus is higher, and we have never in the last five years begged or requested our members to give additional money for hypothetical causes or ideas.

"To my mind one of the outstanding accomplishments of this Association during the past year has been the further establishment of standardization of colors and the successful forecasting of seasonal ranges of color for its members. This work has been carried on with the hearty cooperation of Margaret Hayden Rorke, Managing Director of The Textile Color Card Association of the United States. The constant creation of colors, as worked out by these two organizations, has done more for the hosiery industry than any one single thing that has ever been accomplished, for color has been the life of the industry, and it has required incessant propaganda to keep it alive in the face of various efforts by those who prefer to handle fewer colors and those more somber in hue.

"I believe there is only one field of activity in which this Association is weak, and the fault must be laid at the door of its members. The field is statistics. It seems almost impossible to get this industry to report figures and facts at the present time.

"I am hopeful that this will eventually be accomplished by the growth of this Association, the further confidence of its members, and constant propaganda of educational value relative to the combination of facts and figures as they affect our industry.

"I take great pleasure in looking back to one of the first

PLAY TIME

calls for Fancy Hosiery

Consequently, the stocking market demands Children's hosiery of almost every imaginable pattern, and a manufacturer is "hard-put" to produce something unusual.

Standard Knitters offer a relief from a limited variety of patterns for many striking and unusual arrangements can be made on these machines. The stocking illustrated above is one of many designs possible with the Standard Knitter, equipped with attachment "C". This produces the ever popular horizontal stripe by a positive (mechanical) method of yarn change that is far superior to other methods.

There is practically no limitation in making up patterns with this machine, as the stripes may be made in any combination. Also, a continuous change of pattern can be made, throughout the stocking with no repetition.

A complete description of the entire line of Standard H Knitters and their wide range of application is contained in our catalog. You may have it, gratis.

STANDARD-TRUMP BROS. MACHINE CO. *Wilmington, Del.*
JAMES BUILDING, CHATTANOOGA, TENN.

reforms inaugurated by this Association, i. e., the rulings on uniform labeling of products as they affected the consumer; in other words, truth in marking and stamping of merchandise. Since this ruling was made by the Association, in cooperation with the Federal Trade Commission, there have been relatively few attempts to label marchandise improperly, up to this year.

"I am sorry to say that at the present time, due to the overwhelming desires of some people, we learn that merchandise is being distributed in the market with attempted misleading labeling. I beg to call your attention to the fact that one thread of pure silk in the welt of a rayon and mercerized stocking does not permit a manufacturer to stamp his merchandise "Silk and rayon." Furthermore, one thread of wool in the heel, toe and top of a stocking does not permit a manufacturer to mark his merchandise "Silk and wool" or "Cotton and wool."

"I must warn you that such flagrant violations of labeling will sooner or later cause endless trouble and expense to those who are not adhering to the policy of proper labeling of their merchandise.

"Time and time again during the thirty-two years that I have been a manufacturer of hosiery and underwear I have been approached by manufacturers with the proposition of 'Let us get together and fix prices, or control production.' There is no doubt that those two expressions are euphonious sounding, but they are decidedly impractical.

"In the first place, any combination to fix prices or control production is illegal, and far more than being illegal, is impractical. The law of life and business is the survival of the fittest, and the philosophy of life quoted many years ago by Plato is the 'application of our efforts to the thing for which we are best fitted.'

"When a group of men are forced together to protect themselves by means of illegal combinations, they immediately acknowledge an innate individual weakness in the management of their own business. An Association of manufacturers is not and never has been, if properly conceived and organized, an instrument through which people can gather for relief against the pressure of economic conditions by resorting to price fixing.

"The greatest example recently presented to the business men of this country as to the futility of attempting to control production has been given recently by the oil industry. There is no more powerful group, financially or otherwise, than the oil producers of this country.

"The executives of the various competing organizations today were, in years gone by, working partners in a parent company. With the benefit of friendship covering a period of years, with the weight of huge financial working capital, this industry, after forming a committee to control production in the Seminole field in Oklahoma, was forced to throw up its hands and tell the world in all honesty 'IT CAN'T BE DONE.'

"If I may be pardoned for digression, and the use of the varnacular of the present day, forgetting for a minute the legal side of this situation, If *they* can't get away with it, how could we hope to obtain the object in which they failed?

"In discussing the textile situation with a group of bankers recently, I was startled to hear a representative financial authority state, 'My thumbs are down on the textile industry because outside of the Silk Association of America there is no such thing as a standard contract, and all the so called contracts being signed today favor the buyer.'

"I am sorry to admit that this is a truthful analysis of one of the troubles with which we are forced to contend in our industry.

"The so-called order that we all accept today, calling for so many thousand dozen, without details and specifications, and without, above all, any mention in this so-called contract of a fixed date signifying the limitation of time as to when the details and specifications will be given, is nothing more than a scrap of paper.

"This Association has tried five different times to have this form of contract sustained by the courts of the State of New York, and each time it has been defeated.

"I know that it is practically impossible to get the entire industry to adopt a standard form of contract. While the manufacturer would be willing to cooperate in an effort of this kind, when the big consuming customers tell him that they refuse to sign a standard contract, the manufacturer will weaken. I am no different than anybody else.

"However, there is one small phrase or clause that could be printed, and I hope will be, on every order blank used in the future in the hosiery and underwear industry, and that is: Every dispute of whatsoever character arising out of this contract must be settled by arbitration, to be conducted in the manner provided by the by-laws, rules and regulations of The National Association of Hosiery and Underwear Manufacturers governing arbitration.

"I frankly and honestly believe that more money can be saved for the hosiery and underwear manufacturers of this country through that clause than any other new or progressive move that we might attempt to organize or promulgate. Arbitration is not a theory, it is practical. Its great value has been demonstrated clearly by one association, i. e., the Silk Association of America.

"I have instructed our Managing Director, John Nash McCullaugh, to spend the next twelve months forming a larger Arbitration Committee than we have had in the past, and to have drawn up rules for arbitration that are both legal and binding, and as I feel that this Association has never fallen down on anything it has started, I hope by this time next year that the result of his new effort will have been shown.

"In conclusion, I wish to thank my fellow officers and the Directors of this Association for the whole-hearted cooperation they have given me during the year, and I also wish to thank most profoundly the busy executives of hosiery companies located in New York for the time and effort they have devoted as members of the Hosiery Color Card Committee of this Association."

Following the reading of Mr. Galbraith's address, J. H. Zens, of Chattanooga, Tenn., moved that all of the reports made at the meeting be sent to all members with a subsequent bulletin. This was unanimously adopted, as was a further motion that the Association endorse all acts of the board of directors during the past year. The report of the nominating committee, made by T. H. Johnston, was adopted with the results reported at the beginning of this article.

The Luncheon.

This concluded the convention with the exception of the annual luncheon, held at 1 o'clock. This, as was the morning session, was held in the exhibit hall, resulting in

Has Been Supreme In The Production Of Fine Fabrics For Two Thirds Of A Century

Over sixty years ago ATWOOD started a little shop that has since grown into the plant that produces 80 percent of the world's silk throwing machinery—doing business with every section of the globe.

ATWOOD Machinery is known the world over as the best machinery for the rayon and silk trade and includes Winders, Spinners, Twisters, Reels, Doublers, Redraws, Warpers and other special machinery.

The 4-F Rayon Winder

is the last word in a dependable, economical machine for winding soft silk, rayon and fine cotton yarns. It is high and narrow in size, requiring only a minimum of floor space. Adaptable to either the automatic screw traverse or the regular patented cam traverse with adjustable throw. The patented gear gain adjustable swifts, which have proven so efficient, are found only in the ATWOOD machine. Four styles of swifts, regular stick swift, friction hub adjustable swift, geared adjustable swift and the new style wire adjustable swift. Efficient motor drive attachments, quiet-running, spiral gear driven take-up shafts and many other exclusive features substantiate the prestige that ATWOOD has maintained throughout the world for so many years. It may be built for any desired space for any size or type of take-up bobbin, or any size of swift; either single or double friction take-up.

Write for specifications and further information.

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Established 1863

Stonington, Conn. Water & Trumbull Sts.

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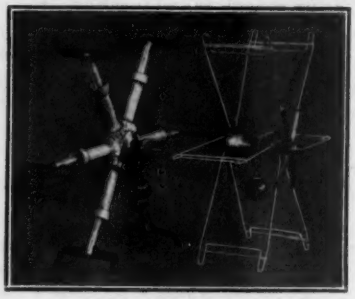
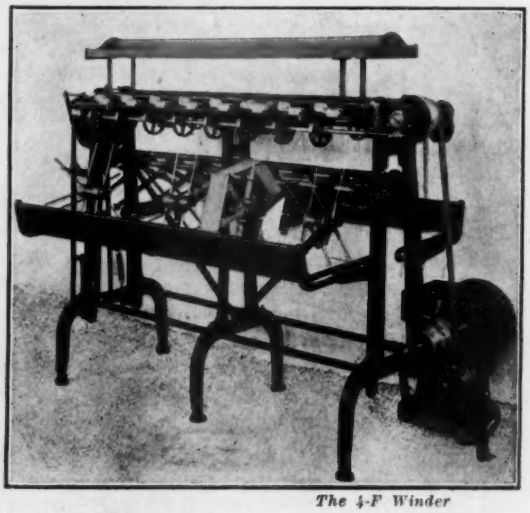
Maximum Production
Satisfied Employees
Simple Operation
Minimum Waste
Few Repairs
Quickest Results

Built Principally To Wind RAYON



Geared Swift and Wire Swift



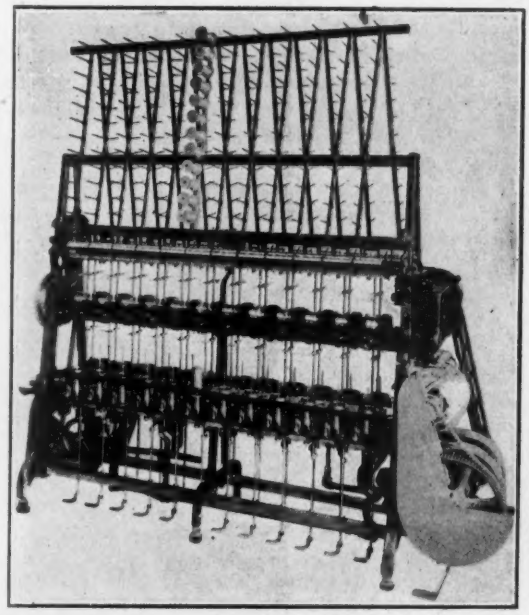
The 4-F Winder

ATWOOD

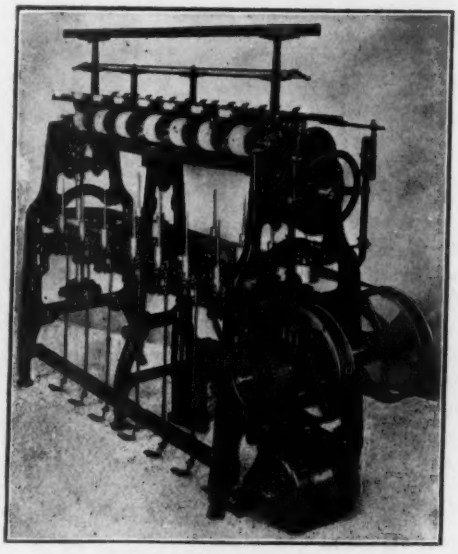
SILK THROWING MACHINERY

ATWOOD

Built Principally To Wind RAYON



The 5B Spinner



The B-H Spinner

The 5-B Spinner

Here's another ATWOOD Machine that has proven a paying investment for many mills. It is a combined doubling and twisting frame for working silk, silk and cotton mixtures and rayon. It is capable of doubling and twisting materials from two to fourteen threads—threads being taken from the bobbins above, passed down through dropwires to a large diameter gear driven feed roll and from there are twisted into a single thread and wound by ring spinning on bobbins below. Patented stop motion saves power and also eliminates one spindle effecting the twist of the next spindle when stopped by thread breakage. Feed roll shafts, direct driven from main cross head by chain, insures against possible slippage and variation in twist. Simple adjustment changes drive from right to left twist. Ball bearings used in all driving parts. Many other features contribute to the efficiency and dependability of this machine.

The B-H Spinner

The frame of this machine is built in such a manner that spindles are at a very convenient height for the operator doffing bobbins, etc. Separators may be placed easily between spindles to keep the ballooning threads from becoming tangled or broken. Furnished with either foot treadle or hand stop motion to stop each individual spindle when doffing. Fingers so designed that spindles may be placed at any center distance desired to allow for large or small delivery bobbins, the ballooning of the thread, and still use the standard size take-up bobbin. Fitted with horizontal motor drive which allows for a great range of spindle speeds. Two horsepower motor is large enough to drive a 100 spindle frame, as ball bearings are furnished on the drive, foot end and take-up shaft bearings. Adjustable tension girts, covered take-up pulleys (optional), patented cam traverse and other features make this machine second to none of its kind.

Write for specifications and further information.

THE ATWOOD MACHINE CO.

Established 1863

Stonington, Conn. Water & Trumbull Sts.

ATWOOD

SILK THROWING MACHINERY

an overflow attendance similar to that of last year's meeting. No speeches were made, and no other formalities prevailed at the luncheon. The features were musical selections by the Ipana Troubadors, and solos by Horace A. Ruwe, tenor.

The Knitting Arts Exhibition.

The Knitting Arts Exhibition, held annually in Philadelphia, is nearing a quarter-century of definite service to the knit-goods industry. There are those who well remember the modest beginning, over 20 years ago, and who can vividly recall the remarkable progress which has accompanied each successive annual exhibit. Each exhibition has broadened the scope and value of its predecessors, and the Knitting Arts Exhibition, held at the Commercial Museum during the week of April 4th to 8th, inclusive, set a new mark of increasing value.

One phase of its effect was that it presented more completely than any of the preceding shows a comprehensive display of equipment and supplies, making examinations of the individual exhibits educational and complete in their instructive effect. This was accomplished without the advantage of an unusual amount of brand-new and revolutionary machines and equipment. Held every year, the exhibition presents growth and progress more gradually than would be the case were the intervening period of time longer, permitting more time for the deevlopment of new ideas.

At the same time, however, the machine and supply manufacturers have not, during the past year, neglected any occasion for the refinement and improvement of their products, with the result that the exhibition offered the latest and most modern designs of all types of equipment; and in some instances some interesting departures from accustomed methods were offered.

It is a safe assertion that no textile exhibit of any character operates more smoothly and with less friction and confusion than the knitting show. This is an admirable compliment to the efficiency of General Manager Chester I. Campbell and his corps of assistants, who seem to anticipate every need of the individual exhibitors. It has become almost unnecessary to enter complaints as to the provisions, and when changes of conditions are desired, the management is immediately capable in providing satisfaction. This situation contributes largely, in an indirect way, to the success of the knitting shows.

Comment upon the show this year must include reference to the predominant situation occupied by rayon. In addition to a large number of booths representing rayon manufacturers and distributors, it must be observed that practically every operating exhibit featured rayon in one or more ways, giving its handling and use the precedence in the demonstrations, and furthermore the supply and oils exhibitors made the handling of the synthetic fiber a main point in their own displays.

It should be noted further that a most satisfactory attendance was a feature of this year's show. Special cars from the Middle West, and South, and Canada, brought hundreds of knitters to the exhibit, while others came singly or in smaller parties. The honors for sending the largest attendance perhaps goes to the South, a canvass of the exhibitors indicating that from this section came most of their inquiries and orders.

In this connection, it was interesting to learn that during the show, an astonishing number of full-fashioned plants seemed to have been born, practically all of these being located in the South. The representatives of full-fashioned machinery manufacturers maintaining booths at the show were among the busiest of the exhibitors, and sizeable orders of several different makes of machines were placed by southereners bent upon developing and expanding this branch of the industry still further in their section. These new plants, of course, call for other equipment, much of which was ordered during the show, so that all in all practically every exhibitor was satisfied with the business placed and developed during the course of the week.

The decorative scheme of the exhibit hall was as usual, very attractive, and the order and neatness with which the individual exhibits were arranged and kept added to the general effect of the entire show. Descriptions of some of the representative exhibits follow:

Aberfoyle Manufacturing Co., Chester, Pa., maintained their customary attractive reception space, where visitors were received during the week by Harry Buckley, E. L. Dale, J. P. Holt, J. A. Holt, J. K. McCrudden, T. J. Golden, E. F. Golden, R. W. Yeabsley, and others of the sales force of the company.

American Cellulose & Chemical Mfg. Co., 15 East 26th St., New York City, had an interesting display of "Celanese" products and SRA dyes. Featured were woven and knitted fabrics in which Celanese was used, and various finishes, including moire, embossed, Schreiner, and others, were being displayed. An exhibit demonstrating the manufacture of Celanese yarn was included in the booth. C. H. Zensen, of the Philadelphia office, was in charge. Todd B. Meisenheimer, southern representative, and W. H. Barnhardt, were present from the Charlotte office, and Harry Price of New York and Mr. Frank of Chicago were also in attendance.

American Laundry Machinery Co., Cincinnati, Ohio, showed five "Super" type all Monel Metal rotary dyeing machines, with both direct motor and belt drives; also the well-known "Humatic" extractor and the vertical motor-driven extractor. The "Super" line was explained as being a new and distinct addition to the line of hosiery dyeing equipment manufactured by the company, this exhibition being the first official announcement of the line to the trade, although a number were already in operation throughout the country. Sturdy construction, ease of operation, even dyeing made possible by an extremely long bath, or ratio of dye liquor to hosiery, simplicity in adding dyestuffs, were among the points brought out by the representatives present. George G. Rups, manager of the textile division was in charge. Others present included George S. Blackburn, British agent; H. G. Mayer, southern agent; Paul J. Abrams, eastern representative, Seth Catlin, western representative, Garr Mosely, southern representative, R. C. Caine, J. C. Dowling, and R. A. Whitney, from the general offices at Cincinnati.

American Yarn and Processing Co., Mount Holly, N. C., had representatives who received customers and friends in their usual reception space. Edwin Hutchison, of Mount Holly, was present, with David Whitehurst, also from the main office, with R. D. McDonald, of Chattanooga, sales representative, also present.

H. Brinton Co., 3700 Kensington Road, Philadelphia, Pa., were featuring, in their operating exhibit, a 28-needle

sinker top machine on underwear. Also shown were: one 16-inch four-feed, trick wheel, Jacquard design machine, with French welt; one 5-inch trick wheel rib machine making neck-ties; the regular 3½-inch French welt ribber, 240-needle; a 4-inch 280-needle trick wheel rib machine with French welt for golf hose; one 4¼-inch, 280-needle ribber, single feed, with drop-stitch attachment for misses' ribs; one 4-inch trick wheel fancy design for hosiery tops. H. S. Horrocks, secretary-treasurer, W. H. (Billy) Allerton, Eric Cordon, K. R. Forrest, and Harry Elwell, were in attendance during the week.

H. W. Butterworth & Sons Co., Philadelphia, (Klauder-Weldon Division) had in operation a line of improved dyeing machinery produced at their Klauder-Weldon plant at Bethayres, Pa. A complete range of sizes was shown, in both paddle and rotary types, including a 100-, a 50- and a 20-pound machine, with a 10-pound laboratory size. The features demonstrated included the all Monel metal construction, safety catch devices, and general construction eliminating anything other than the Monel metal from touching the goods and adding to the strength of the machine. All machines shown were equipped with thermometer attachments. H. W. Butterworth, Sr., H. W. Butterworth, Jr., A. W. Butterworth, J. Ebert Butterworth, of Charlotte, W. S. Rowly, William Yates, W. Bell, and Frank Miller were present during the week.

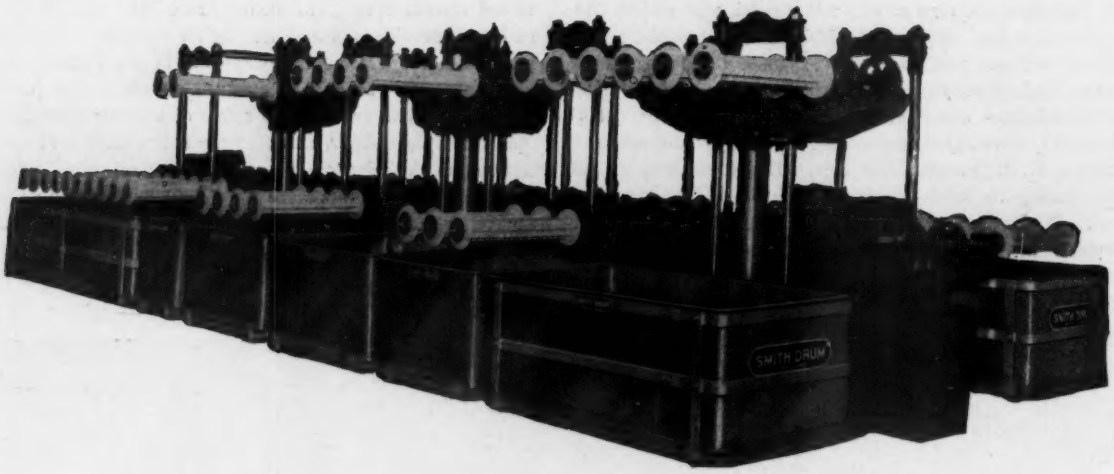
Carolina Power & Light Co., Raleigh, N. C., had a booth of especial interest to manufactures contemplating the establishment of southern plants. A large illuminated map showing the company's power system in the central portions of the two Carolinas was the background of the exhibit. M. T. Dunlap and J. F. McHugh were present to discuss the Carolina section with interested visitors.

Charles Cooper Company, Bennington, Vermont, maintained exhibit space, and demonstrated the line of spring and latch needles manufactured by the company. This company is now operating the properties of the Charles Cooper Estate. It was announced at the show that a probate court ruling had released the estate of Charles Cooper, and Anna Semple Cooper, and that the entire latch and spring needle and knitting machinery business of the original Charles Cooper plants were purchased by Elizabeth Cooper Kelley. By this purchase, it was explained, the interests of Alexander J. Cooper, former president of the Cooper Manufacturing Company, became the property of Mrs. Kelley, who intends to expand the business with the addition of new capital, Alexander J. Cooper having retired. Charles S. Kehoe, executive head, John J. Hayes, plant manager, G. H. Rogers, sales manager, and Charles C. Kelley were at the booth.

Knitting Arts Exhibition from One End of the Hall.

Cooper-Hewitt Electric Co., Hoboken, N. J., featured two of their "Work-Lights" in operation. Also shown was a looper in operation, to demonstrate the effect of this light on this type of work requiring clear vision with no glare. C. F. Strebig, sales manager, and D. R. Grandy, commercial engineer, were present, assisted by H. M. Ferree, A. W. Willman, R. B. Chipman, and C. R. Bragg.

Dixie Mercerizing Co., Chattanooga, Tenn., operated a small moving picture which showed the processes in their spinning mill and mercerizing plant. George H. Ellis, Blackwood Cameron, B. Pfingst, and F. W. Frank, of Chicago, were among the representatives of the mill and the



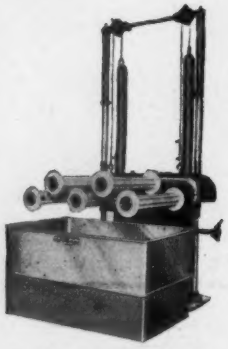
Smith Drum Ribbon Dyeing Machine

—a machine made to do *one job well.* It is manufactured by dyeing machine specialists. It is backed by an organization known throughout the textile industry for the sturdiness and efficiency of its products.

This machine is built in separate parts, each individually controlled. The skein arms are of extra strength to prevent sagging. The sleeves of the arms are of porcelain to prevent dye contamination. The tanks are of monel metal.

Another Smith Drum Machine similar to the Ribbon Machine in design is made for Skein Dyeing.

Complete information about both machines will be sent on request.



5 Reel Hydraulic Skein Dyer

—a smaller "edition" of the large machine shown on this page. It is finding a ready response among mills for dyeing the small lots of skein yarn used in making the fancy hose so popular at the present time.

SMITH DRUM & CO., Philadelphia, Pa.

SMITH DRUM

This booklet will help you do it. Claim your copy by using the coupon.

THE high quality of Rayon production in general makes it imperative to give your garments the unusual touches which add to their sales value.

Getting the most out of Rayon is contingent upon proper finishing. So this booklet has been made valuably informative, with descriptions and illustrations of attractive seaming and stitching.

Willcox & Gibbs Machines enable you to secure these beautiful effects. In addition, they are strongly constructed precision machines, a superiority clearly revealed by high speed and economical operation.

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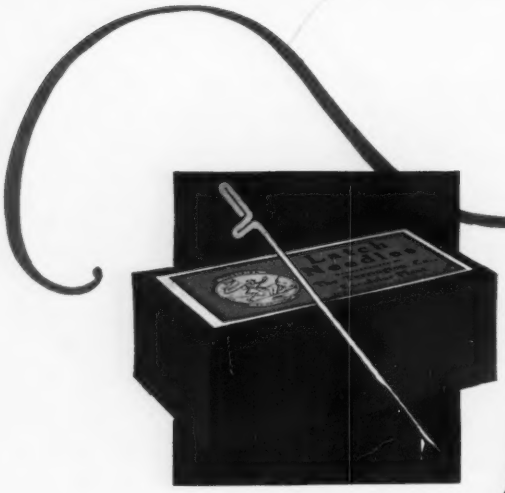

These needles stop YARN FRAYAGE

FRAYED yarns! Sometimes the bane of knitting. Yet easily preventable by the use of Torrington Needles.

The silky smoothness of these good needles ... with latches free from yarn-catching roughness ... stops the exasperating and expensive wastage of yarns due to this cause.

You will like Torringtons. Made to the highest standards of precision. Used and endorsed by two generations of leading manufacturers.

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Torrington, Conn. U.S.A.

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selling agency present.

E. I. du Pont de Nemours & Co., Wilmington, Del., showed through their dyestuffs sales division. The feature was a moving display of hose showing seventeen of the popular shades, dyed mostly on silk, together with the component parts used in securing each shade. Dupont rayon dyed with vat colors, with special Kliftex Souple finish turning the rayon finish to the dull luster of silk, was on display. The ruling shades of hosiery matched with the ruling shades of leather were shown. The company's complete line of knitgoods dyestuffs was being explained. R. A. Carter was in charge of the exhibit. Among others present were James Sandridge, Ben R. Dabbs, Karl Kurg, W. G. Hamlen, John McNamara, W. C. Beattie, Charles Hamil, Roger Franklin, C. C. W. Wilson, and W. B. Thompson.

Eclipse Textile Devices, Inc., Elmira, N. Y., were featuring in operation their new four-color random dyeing machine, dyeing as many as four colors on the same cone of yarn at the same time. The single machine also was shown. The Eclipse improved yarn cleaner for winders and spoolers was shown in operation. J. C. Ferguson, general manager, was present for part of the week. Others in attendance were J. P. Gary, L. E. Uttrich, J. D. Lutes, L. P. Hasbrouck, and Henry E. Van Ness.

Fidelity Machine Co., 3908 Frankford Ave., Philadelphia, showed five machines, as follows: 3½-inch Universal single feed selvage welt ribber with dogless, two speed drive, two end stationary stop motion; 3½-inch Universal double feed French welt ribber with dogless, two speed drive, four-end revolving stop motion; 3-inch two-color Universal ribber with dogless, two speed drive, two end stationary stop motion; 3-inch Fidelity multi-design true rib machine—four colors horizontally, ninety colors vertically—set up for making infants' tops; 4-inch Fidelity multi-design true rib machine—four colors horizontally, ninety colors vertically—set up for making seven-eighths fancy tops. Also shown was the Helzen lubricator, the cone holder attachment, the Steere cuff turner, the super cone thread guide, top cutter and Helzen "Stadjust" brake. The braiders exhibited included one four-head No. 1, 13 carrier individual control braider for rayon trimming; one four-head No. 2, 13 carrier individual control braider set up complete for making elastic braid; and one three-strand rug braider. One Thomas creasing machine, with interchangeable dies for creasing rayon shields and sweater knitwear pockets, was in operation. H. W. Anderson, A. S. Johnson, Jr., Walter Larkin, S. B. Blaisdell, Fred Thomas, and Bert Sloan, were in attendance for the company.

Finnell System, Inc., Hannibal, Missouri, were emphasizing the household and light office cleaning machine. Also shown were the regular No. 20 large machine, the Model 17, the Model 15 in the industrial line, the No. 7 mopping truck, the new No. 6 mop truck, etc. J. H. Lindstrom, H. L. Jones, and E. C. Aylor were present.

The J. B. Ford Company, Wyandotte, Mich., showed the complete line of Wyandotte textile alkalies, used in bleaching, kier boiling and de-gumming. Products for cotton, silk, rayon and combination fibers were displayed. Fred S. Klebart, service manager, J. W. Turner, and H. E. Moyer were present throughout the show.

Foster Machine Co., Westfield, Mass., had in operation a No. 75 winder for fine cotton, rayon, and pure silk yarn on cones and tubes for warping, sewing, etc.; and a No. 101 for cotton and wool yarns. T. E. Connor was in charge, with D. W. Bridgman, C. B. Terry and Allen Atwater also present.

Franklin Process Company, Providence, R. I., maintained exhibit space where representatives discussed with visitors the Franklin process of dyeing yarn on cones, tubes and cops. W. A. Travers, general manager of the company, was a visitor during the week. Others in attendance were F. S. Hoese, and H. E. Glendinning, of Philadelphia, J. D. Murray, of the Chattanooga plant, and B. M. Phettlephace, of the Southern Franklin Process Co., at Greenville, S. C.

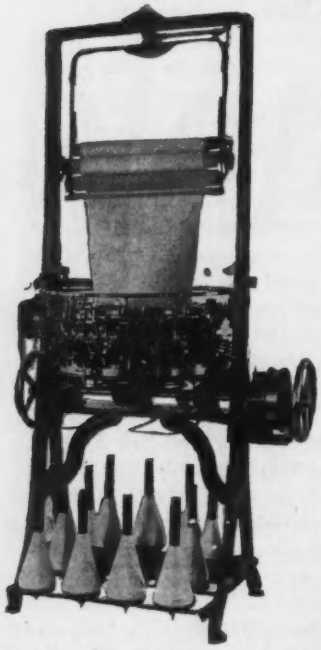
General Electric Co., Schenectady, N. Y., featured several general purpose motors of the sleeve and ball bearing types; also the contactor starter for throwing motors directly across the line with push button stations. A line of fractional horse-power motors; the Design A loom motor, totally enclosed, with waste packed bearings, also displayed. An exhibit of Edison lamps, together with descriptions of various methods of lighting mills, was shown. F. C. Smith and J. Towne of Philadelphia, were present. W. J. Dorworth, industrial manager of the Atlantic division, and W. W. Cronkhite, of the industrial department Schenectady were among the representatives present.

Giles Dyeing Machine Co., Adams Ave. and Leiper St., Philadelphia, were featuring, for their exhibit, a model of their latest type hosiery dyeing machine in operation. The machine is constructed entirely of Monel metal, and is suitable, it was explained, for cotton, wool, silk, rayon or three-fiber work. Representatives were explaining the construction of the machine, which, it was pointed out, holds the goods dormant while the liquor is forced through them, first in one direction and then in the other, the reversal of circulation being automatic. In attendance were J. H. Giles, Donald M. Giles and William Whitely.

Alfred Hofmann, Inc., 635 15th St., West New York, N. J., exhibited samples of hosiery produced on the Shubert & Salzer full-fashioned machine which is represented in this country by them. Of especial interest was a 57-gauge product, made of one-thread silk. Carl E. Weinberg was in charge, assisted by E. Feustel.

The Hemphill Co., Pawtucket, R. I., exhibited the latest type Banner machines producing hosiery with horizontal and vertical stripes, diagonal stripes, diagonal with either horizontal or vertical or both, pointed heel, split-foot pointed heel and split-foot with suture seam, and plaited high splice. Among the machines were one of each of the following descriptions: 160-needle, 3½-inch half-hose diagonal stripe machine; 120-needle, 4-inch, golf hose diagonal stripe machine; 144-needle, 2¾-inch, children's diagonal stripe machine; 300-needle, 3½-inch ladies' combination machine; 220-needle, 3½-inch, half-hose combination machine, with horizontal and vertical stripers; 240-needle, 3½-inch half-hose combination split-foot machine with all latest improvements; 260-needle, 3½-inch ladies' combination split-foot machine with pointed heel attachment; 260-needle, 3½-inch ladies' combination machine with pointed heel attachment; and 160-needle, 3-inch children's hose machine with horizontal and vertical stripers.

Industrial Fibre Co., 200 Madison Ave., New York City, were featuring displays of various knitted and woven products made from Industrial rayon, together with samples of the yarn, and a chemical exhibit showing the whole



Spring Needle Rib Top Machine

Spring Needle Rib Knitting Machinery

COOPER SPRING NEEDLE CIRCULAR RIB KNITTING MACHINERY is standard for ribbed underwear in silk, Rayon, cotton and woolen underwear. Shirt Cuffs, Drawer Bottoms and Collarette.

For three-quarters of a century the name Cooper has represented knitting at its best. Starting with a small needle-making shop in Nottingham, England, and coming to the United States in 1842, James Cooper became the first American engaged in this trade. He realized from the very first that the making of needles and knitting machines was a scientific undertaking. Thus has he handed down to his descendants an undying inspiration which has kept these famous products far ahead of the times.

Oldest Makers of Spring Needles in the United States

From a hand-made, sparsely produced needle, the Cooper Line of Spring and Latch Needles has grown with the textile industry into the most complete in the United States. As the first manufacturers of Spring Needles we have retained a life long prestige—accounting for the fact that Cooper is to Needles what Sterling is to silver.

Charles Cooper Co.

Machine and Needle Works

Bennington, Vermont, U. S. A.

G. H. ROGERS, Travelling Representative
877 Warren St., Albany, N. Y.

J. A. WILLARD CO., INC., Southern Representative
Greensboro, N. C.

Agents: MELLOR, BROMLEY & CO., Ltd., LEICESTER, ENGLAND.

ELBROOK, INC., 120 Broadway, NEW YORK CITY, Agents for China and Japan.

process of rayon manufacture from the wood pulp to the finished yarn. A. A. Murphy, vice-president, Hiram S. Rivitz, general manager, George Brooks, Fred Neiderhouse, A. D. Norris, B. R. Siegel, William Burke, Bruce Griffin, and Harry Schwarz, were among those at the booth during the week.

International Nickel Co., 67 Wall St. New York City, maintained their usual cooperative exhibit of Monel metal, showing its application to hosiery mill equipment. A new feature was a number of Monel metal framed photographs of hosiery equipment using the metal. Also, a directory listing the other exhibits involving Monel metal in the equipment shown was displayed. A baloptican, showing uses of Monel metal, attracted considerable attention. E. A. Turner was in charge, assisted by W. J. Calnan and C. R. Jordan.

Kali Manufacturing Co., 1410 North Front St., Philadelphia, manufacturers of Hydroxy finishing oils and other chemicals, featured their new product Kalite (peroxide hydrogen), which, it was explained, produces a soft bleach, being made by a principle different from the usual method. Kalizene, for finishing hosiery, was another product receiving especial attention. In addition, samples of the company's boil-off oil for pure silk, the three-fiber boil-off oil, the art silk boil-off oil, the art silk coning oil, the rayon slashing compound, acetic acid, ammonia, formaldehyde, and other products were displayed, including the well-known Developene. Samples of all of the products, together with materials showing the results of their use in finishing, were on display. James A. Branegan, president; S. G. Davenport, secretary-treasurer; J. J. Donlen, Eugene Wall, H. L. Neiser, Russell Harris and Walter Phipps, were in attendance representing the company during the week.

Kaumaugraph Co., 350 West 31st St., New York City, showed their dry transfers, and samples of lithographing, together with their new Kaumakrone transfer for multicolor work. The recently perfected dye transfer was also being explained. H. A. Keech, Philadelphia representative, George M. Porges, N. E. Griffith, and others were present. Trowbridge Marston, president, was a visitor on one day.

David Lupton Sons & Co., Philadelphia, featured their line of steel equipment, featuring their looping tables, seaming tables, bar topping tables, knitters' benches, work boxes, storage cabinets, etc. Fred W. Eickhoff, E. R. Henry, C. Brinton and John L. Bartram, southern representative, were present.

Malina Company, 6 West 18th St., New York City, were exhibiting samples of their patented groove wind for rayon cones. L. Malina, Thomas Park, and Mr. MacDonald of Chattanooga, were present throughout the week.

Merrow Machine Co., Hartford, Conn., showed in operation several varieties of the Merrow high speed overseaming and overedging machines, designed expressly for seaming, hemming and edging knit goods of every description, including men's, ladies' and children's knit underwear of cotton, silk or rayon; stockings and socks; bathing suits; jerseys and many other knitted products. J. G. G. Merrow, O. W. Merrow, Joseph Tolar, and other representatives were on hand. The exhibit was in charge of the Merrow Sales Corporation, 56 North Sixth St., Philadelphia, Pa.

National Aniline & Chemical Co., 40 Rector St., New York City, occupied their usual reception space, showing samples of hosiery dyed with National colors. Dr. Louis J. Matos was in charge, with George L. Gilbert, Dan McGowan, William Scholler, Faris Mitchell, John Sunderland, Roland MacDonald, W. H. Willard, and others, present.

Oakite Products, Inc., 22 Thames St., New York City, had samples of their product Oakite, as well as materials wet-finished with this product, in silk, cotton, wool, and various rayon mixtures. Arthur W. Perry, field sales manager, Frank Wall, Philadelphia district representative, C. W. Everson, of Philadelphia, D. S. Taylor and D. Hearne, of New York, and W. H. Cook, of Oakite News Service, New York, were present.

Peerless Machine Co., Inc., Coral and E. Hagert Sts., Philadelphia, were featuring, in operation, the new Peerless flat seamer, for producing a flat, narrow elastic seam for full-fashioned hosiery. This machine is comparatively new, being exhibited for the first time at this year's show. The features pointed out included the fact that it operates with a positive worm drive, there being no dogs and no friction drives. John H. Bauer, of the company, was in charge, assisted by Charles Hill and A. Hunis, and Edna Rowan, operator.

Philadelphia Drying Machinery Co., 3351 Stokley St., Philadelphia, were showing the improved electric hosiery drying form, with the adjustable toe feature, equipped with a four-step temperature control, adaptable especially to chiffon work. The adjustable toe in the electric form, it was pointed out, receives the heat uniformly all the way. Also shown was the improved automatic hosiery dryer, with aluminum forms and the adjustable toe feature. The Monel metal dyeing machine manufactured by the company was also in operation. Thomas Allsop, president, Walter W. Sibson, secretary-treasurer, H. O. Kaufmann, C. H. Reumann, and Howard Morshead were present during the week.

Philedalphia Metal Drying Form Co., 123 North Fifth St., Philadelphia, featured their new heel guide form for full-fashioned hosiery, this being explained as a means for keeping the stocking securely in place on the forms, reducing reboarding and labor in pairing. The regular seamless forms, with the "Adjustoe" toe, were on demonstration. J. O. V. Stetten was in charge, with Paul Guggenheim and William Walter also present.

Proctor & Schwarz, Inc., 7th and Tabor Road, Philadelphia, had an operating exhibit featuring the Model D two-operator hosiery dryer. Among the points being demonstrated were a white rubber finger for preventing marks in stripping the hose from the forms; a Monel metal stocking fan; new drying features permitting the drying of all weights from chiffon to heavy stockings; a theormostatic control which permits the control of the temperature at any desired point; and the adjustable toe feature, changeable while the machine is in operation. The company had on display the highest honor award with grand prize certificate, showing this award had been given the machine at the Sesqui-Centennial Exposition. Major C. T. Griffith, manager of the hosiery dryer department, was in charge. Others present were C. S. Tiers, assistant manager, C. E. Dennison and E. C. Keener, of Philadelphia, Hazel G. Mayer, of Charlotte, W. H. Morton, of Hamilton, Ontario, and A. W. Buhlmann, of New York City, in charge of foreign sales.

Scott & Williams, 366 Broadway, New York City, maintained their customary operating machine exhibit, featuring a new spiral float striping machine, making fancy pat-

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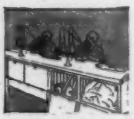

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LUPTON PIVOTED WINDOWS

terns by the floating stripe method, the patterns being obtained by jacks under each needle. The new 70-gauge silk body machine for silk and rayon and combination fabrics was another feature. In addition, all of the fine gauge Model K machines were shown—including the 3½-inch, 300-needle chiffon machine, the 3½-inch, 280 needle machine, the 3½-inch, 260-needle machine, with various attachments, including the fashion seam, fashion mark, reduced heel, tapered high splice heel; and a full line of machines fitted with yarn change and sinker reverse plaiting attachments. Walter L. Toy, secretary, Harry Swinglehurst, president, and others of the executives and representatives of the company were on hand.

Smith, Drum Company, Allegheny Ave., Philadelphia, were showing for the first time the new skein dyeing machine, for dyeing silk, cotton, and rayon, in skein form. This machine, which is motor-driven, is equipped with Pyrex arms, and Monel metal tank. It is counter-balanced to operate on 30 pounds pressure, using no pump and accumulator. In addition to this was the general line of rotary and paddle dyeing machines, brought up-to-date, with the latest improvements. N. M. Smith, R. P. Smith, H. S. Drum, George E. Drum, and others from the main office were present. W. S. McNab and W. C. Dodson, southern representatives, were also on hand.

Standard-Coosa-Thatcher Co., Chattanooga, Tenn., maintained reception space, where visitors were greeted by W. H. Thatcher, George Carney, W. C. Henderson, P. J. Matthews, W. S. Lawson, Mr. Lesswing, and others.

Standard-Trump Bros. Machine Co., Wilmington, Del., operated ten machines in their exhibit, as follows: two 3½-inch, 200-needle, 8-step, 6-color, reverse plaiting, figure machine; a 3½-inch, 220-needle, 6-color, floating thread half-hose machine; a 3½-inch 220-needle embroidered clock half-hose machine; a 2¼-inch, 130-needle, infants floated thread machine; a 3¾-inch, 220-needle, 6-color floated thread figured ladies' hose machine; a 3½-inch, 150-needle special transfer machine for the Herner full fashioned foot; a 3½-inch, 220-needle plain hose machine for extra heavy reinforcing; a 3½-inch, 200-needle, two-feed machine, with horizontal yarn change; a 2½-inch, 144-needle, broad stripe, infants' cuff top, reverse plaiting machine; and a 3½-inch, 300-needle ladies' chiffon machine. F. H. Thomas, vice-president; N. O. Lansdowne, W. L. Housman, H. E. Housman, H. S. McInnes, R. Z. Fuhrer, S. R. Shelmire, and C. H. Cord were among those at the booth.

Torrington Company, Torrington, Conn., had their usual reception space, and featured in their exhibit the Excelsior spring beard needle for full-fashioned use. The complete line of latch and spring needles was explained. L. J. Ross, secretary, C. Rowe, H. D. Blake, J. W. Sullivan, Louis Unruh, W. T. Bell, W. L. Morgan, and others were present during the week.

Tubize Artificial Silk Company of America, 303 Fifth Ave., New York City, had on display materials made with their product, and especial interest was centered in a sample of goods made of 55 denier Tubize and one end pure silk, made on a Tricot machine, producing a glove silk fabric. K. H. C. Kappel, R. W. Taylor, G. Duis, and E. D. Bryan, of Chattanooga, were present.

Union Special Machine Co., 400 North Franklin St., Chicago, Ill., had in operation, in conjunction with the American Safety Table Co., an exhibit of their well-known line of electric sewing machines for cotton, silk and rayon goods. The especial feature was the Thirty-five Seven felling machine, and attention also was centered on the Model 41200 A hosiery seaming machine, which, it was announced, was awarded the Gold Medal at the Sesqui-Centennial Exposition. A large n umber of representatives attended, including A. M. Sheldon, general manager; T. L. Whitsel, general sales manager; C. S. Thompson, factory engineer; N. V. Christensen, division engineer; o. Austin Horsack, advertising manager; John Chalman, special products engineer; A. Riviere and J. M. Biddle, of Chicago; H. A. Sims, of Atlanta; E. Gratsch, St. Louis, C. H. Crowell, Boston, G. W. Bell, New York, George Rundle, Toronto, and Joseph McNelly, Philadelphia.

Universal Winding Company, 90 South St., Boston, Mass., showed a new 60-GF cone winder equipped for winding cotton yarn for warping. The No. 90 machine for winding rayon direct from skeins to cops and bobbins, both bleached and dyed, instead of spooling, at high speed. The advantage, it was explained, was exemplified by the operation of this machine at high speed, the handling of the skeins is so delicate that it rarely stopped during the exhibit due to any tangling or crossing of the yarn in the skeins. The No. 50 machine was shown winding direct from skeins to cones and handling both unbleached and colored skeins. These machines attracted much attention, it was stated, both in regard to speed of operation, and quality of product. The No. 50 machine was shown as adapted to the winding of silk for use on full-fashioned knitting machines, equipped with emulsifying trough for moistening the silk. F. H. Bishop, vice-president, Arthur I. Harvey, general agent, Frederick Jackson, southern representative, Frank J. Quinn, Philadelphia representative, Jesse W. Stribling, Atlanta representative, William Quinn, Clinton Hunter, John Dean, E. S. Broadbent, and Harold Jackson, together with W. H. Norton, of Hamilton, Ontario, and Mr. Cudlip, of Montreal, were in attendance.

Veeder Manufacturing Co., Hartford, Conn., maintained their customary operating display of counters, featuring counters for full-fashioned hosiery machine, braiders, course counters for underwear machines, etc. R. H. James was in charge, assisted by William Lawson and Joseph Gallagher, of the Crown Auto Specialties Co., Philadelphia.

Viscose Co., 171 Madison Ave., New York City, demonstrated an educational display showing the progressive steps in manufacturing rayon by the Viscose process from the raw material to the finished yarn. H. H. Phillips, W. D. Benson, and E. S. Kennedy were present from the Philadelphia office, together with J. H. Hammes and others from New York and other territories.

Wildman Mfg. Co., Norristown, Pa., showed their line of body machines, etc., including the FBSS3 17-inch 28-cut machine with automatic pattern mechanism for fancy dress goods; the FBSS 16-inch 28 cut spring needle machine for underwear; the PB2, 18-inch 8-cut rib stripe bathing suit machine; the 300-needle spring needle hosiery machine; this machine also with fancy pattern attachment; the P5, 4-color machine for making striped infants' tops; the K1 French welt men's half-hose top machine; and the Jacquard fancy children's top machine. K. Howie, general manager, D. C. Bellas, J. J. Brennen, and F. E. Paul, were present.

Wilcox & Gibbs Sewing Machine Co., 658 Broadway, New York City, displayed in operation their full line of

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sewing, seaming, and ornamenting machines, featuring the handling of rayon. The Cornelly machine for marking and embroidering was included in the display. Other equipment included the Feldlock on nainsook, the Flatlock on rayon, the shell scalloping and overlock machines. G. M. Lewis, of the Troy office, was in charge; others present were R. E. Thompson, of New York, Mr. Crane, of Chicago, George Marsheck, Baltimore, C. Gasbey, Boston, A. McBride, Philadelphia, and Misses Gundecker, McCrystal, Watrouski and McLaughlin.

Yarns Corporation of America, 40 West 20th St., were represented by R. Grisman, president, L. Aibel, vice-president, Herman Schwartz, and others, exhibiting a complete line of domestic rayons, in natural, bleached and dyed forms, on cones, tubes, skeins, etc.

Chattanooga Yarn Men's Association to Hold Outing.

The Chattanooga Yarn Men's Association is making preliminary plans for the annual golf tournament and outing of the Association, which is given for the knitters of the South annually in Chattanooga.

The tournament this year will be held on Thursday and Friday, May 19th and 20th. The program this year will comprise 36 holes of golf, 18 holes on Thursday afternoon and 18 holes on Friday afternoon, playing arranged on a handicap system, winner to receive the Chattanooga Yarn Men's Association trophy.

Various other prizes will be given for low score each day, low net foursome, and gross and net scores.

In addition to the golf, there will be luncheon on both days, a banquet on Friday night and several novelties will be introduced on Friday morning.

The following committees are in charge of arrangements: Entertainment, W. S. Lawson, C. A. Snodgrass, R. C . McDonald and F. N. Belk. Golf Committee, French Campbell, Richard White and Chester Woodall.

Further announcements, invitations and request for golf scores for the purpose of arranging handicaps will be sent out in the near future and the Committees hope that all knitters of the southern states, whether interested in golf or not, will be present for the pleasures of the occasion.

Automatic Arc Welding.

General Electric Company, Schenectady, N. Y., has issued a pamphlet on "Automatic Arc Welding" which illustrates and describes the company's line of equipment for this purpose. A photograph is shown of the first all-electrically arc welded water-pipe line in the world. This line, 22 miles in length, is located in the Gordon Valley in California. The line is of steel plate construction, all seams being welded by the electric arc. The plates were rolled into shape in 14-foot sections and the side seams welded by automatic machines, following which two sections were arc-welded to make a 28-foot section, the circular welds being made with semi-automatic equipment. The automatic welding was done in the shop, and the field welding with gas engine-driven welders. Four sections were welded together on top of the ground, and the welds between these 112-foot sections were made after the pipe was lowered into the ditch.

The annual report of the American Telephone & Telegraph Company, for the year 1926, discloses some remarkable facts regarding the activity of this organization.

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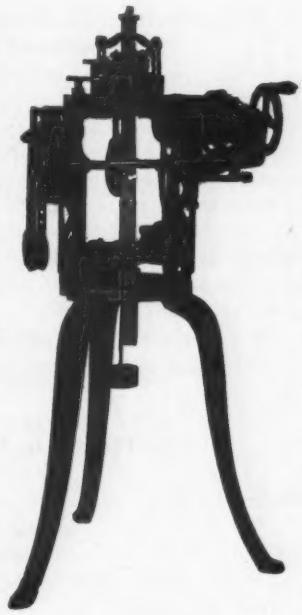

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Australia: J. H. Butter & Co., Sydney, Melbourne.

South America: Santiago Scotto, Moreno 1756, Casilla Correo 662, Buenos Aires, Argentine Republic.

FOREIGN AGENTS

China and Japan: Elbrook, Inc., 51 Kiangse Road, Shanghai, China.

Backwinding Silk from Bobbins on Full-Fashioned Work.

EDITOR COTTON:

I would like to ask through your "Knitting Kinks" department, how other mills are handling the problem of backwinding silk from full-fashioned bobbins. For instance, is it better to run the yarn off the bobbin as far as is safe for the knitter, and back-wind the remainder with the resulting short ends and defective knots, or is it better to clear the bobbin to within about 1/4-inch of the core and then back-wind?

Our back-winding would be done on a Universal winder No. 50 and the yarn used is eight end tram.

CONTRIBUTOR No. 242.

Has Trouble in Union Dyeing.

EDITOR COTTON:

We should appreciate some aid from the readers of "Knitting Kinks" in solving some problems that have come up in our dyeing department, which we shall endeavor to explain as follows:

Up until recently, we have been using in this department the wooden vat coil system for heating the baths by steam, direct and indirect. We have been using the Cassella make of powdered dye and we could almost declare that we had solved the problems that came up in this department. The methods that we use for dyeing are in accordance with the instructions on the containers of the Cassella dyestuffs.

Lately we have bought some rotary type automatic dyeing machinery. Since we have been using this machinery, practically all the lots of hose which we dye turn out badly, since the color is not even, more so at the heel and toe and the inside and outside welt, which is made of cotton thread, the rest of it being made out of rayon. The system which we used for dyeing, insofar as the temperature of the baths, ingredients, etc., are concerned, was the same that we formerly used with success, and nevertheless, now with this machinery the dyeing turns out badly, and besides, we lose a good deal of time due to our having to leave the hose many hours in the machine so that the cotton parts of the hose that have not taken the dye properly may even up a little more. We suppose that these machines are made to give good service and that the bad outcome that we have had with them is due to our not knowing how to place the hose correctly in the compartments, since we notice that they knot quite a bit; or, perhaps, it is due to our oversight of some other detail. We place in the machine for coloring only twenty dozen, five in each compartment, and we place the hose completely loose in them, and in spite of so small a load, they turn out badly dyed. Perhaps we need, in order to have success, nets, and in this regard we are asking you to kindly give us the address of some manufacturer of nets as well as the size that would be most suitable for us to use in these machines.

We desire, in other words, to secure full, detailed explanation of the best manner in which to operate these machines, taking into consideration the fact that we have never used these machines and are completely inexperienced in operating them.

We have dyed under low and high temperatures in order to test out to see if the trouble lies in this, but in vain. First, we placed the hose in a bath of soda ash and Monopole soap, leaving them there for a half an hour at a temperature of 70 degrees Centigrade (158 degrees Fahrenheit). Afterward we lowered the temperature, put in the dye and gradually increased the temperature as usual. We made up the bath as follows: twenty liters of water to one kilo of dyestuff. The water which we use contains a good deal of lime.

The proportion in which we used the ingredients was as follows: For dyeing with Diamond direct dyes, for light shades we dyed at a temperature of 30 to 40 degrees Centigrade (86 to 104 degrees Fahrenheit) in a solution of 2 to 3 grams of Monopole soap and one-half gram of calcium soda to one liter of bath. For dark shades, at a temperature of 40 to 60 degrees Centigrade (104 to 150 degrees Fahrenheit) we used 1½ grams soda, 2 to 3 grams Monopole soap and 10 to 20 grams of kitchen salt to one liter of bath, according to the shade. We then put the dyestuff into the bath, dividing it into two parts. In the first we dyed for fifteen or twenty minutes, then added the second, and manipulated the material for three-quarters of an hour longer, or the necessary time to get the desired shade.

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packng and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Later, we changed this method of dyeing somewhat and now our system is as follows: We dip the hose into a bath of soda and Monopole soap at 100 degrees Centigrade (212 degrees Fahrenheit) and boil them for about ten minutes. Afterward, we lower the temperature of the bath to 65 or 70 degrees Centigrade (149 to 158 degrees Fahrenheit), putting in the dyestuff at which temperature we dye light or dark colors.

With this new system we have succeeded in improving the results, although some few hose turn out badly dyed in the heels and toes. However, we think this may be a result of the manner of placing the hose in the corresponding compartments.

CONTRIBUTOR No. 1505.

Asks Information on Knitted Towels and Face Cloths.

EDITOR COTTON:

I wonder if you could secure for me, through the contributors to the knitting section of COTTON, information on the manufacture of knitted towels and face cloths? That is, a knitted fabric with a pile formed with small loops similar to that of a woven Turkish towel. I am particularly interested in knowing the machinery, equipment, counts and physical characteristics of the yarn required in the manufacture of a fabric of this type, considering that the yarns are purchased in suitable form or package for the knitters. Also, any information available on the finishing and packaging would be appreciated.

CONTRIBUTOR No. 604.

Topping Back After Press-offs on Full-Fashioned Work.

EDITOR COTTON:

It just occurred to me, in case you were willing to include full-fashioned knitting among the subjects covered by your "Knitting Kinks" section, that a discussion of the best practice with reference to "topping back" might be of interest.

You know, when a "press-off" occurs during the knitting of the leg, this may be back-wound and the silk yarn used again in knitting; or it may be "topped back" behind the bad place and the knitting continued from that point. The "topping back" takes time, and the operator therefore is not so enthusiastic about it. However, he should remember that he has given him the production up to the point where it is topped back that he would not get otherwise. Furthermore, it is well-known that back-wound yarn never runs as satisfactorily as we would like in the knitting machine.

This presents, to my mind, the question as to whether there is a point during the knitting process, before which the yarn should be back-wound, and following which it should be topped back. In other words, has anyone figured out accurately that, say, at a point just passed the narrowing marks, and from there on, it would be cheaper, everything taken into consideration, to "top back" than to re-wind; while on the other hand that up to that point in the knitting, it would be more economical, considering the time of "topping", etc., to back-wind the yarn even though it will not run so well?

If any progressive full-fashioned manufacturer has given this thought, I would be pleased to learn of their opinions and findings. In case no one has arrived at such a point, it would be interesting if we could learn of just what practice is pursued in this particular.

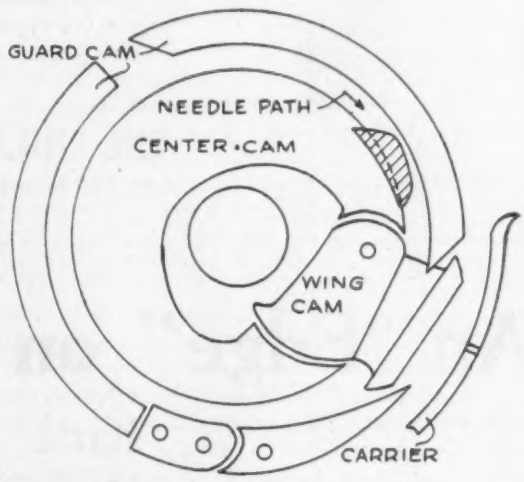
CONTRIBUTOR No. 181.

Breakage of Dial Needles on Selvage Welt Ribbers.

EDITOR COTTON:

We had quite a bit of trouble with breaking latches on the dial needles on selvage welt ribbers. These latches always broke right at the clearing course just before the welt proper, and it was really quite a puzzling problem as they broke at no certain place on the dial, but always at that particular time.

We found that when turning the machine by hand, just after the clearing course cam had discharged all of the stitches from the cylinder needles, that the fabric had a tendency to move out with the dial needles, just before the yarn guide came around. This resulted in the latches



not being thrown back positively, thus leaving some of them standing up in just the right place to be caught by the carrier or bottom of cylinder needle latch opener and broken.

At any other stage of knitting the fabric is on both sets of needles and is held back by the cylinder needles, which forces the dial latches to lay down in the proper position.

My remedy for this was to build up the center cam of the dial cap in such a way that the needles are forced out about 1/16-inch farther than they would be normally, and I found that this remedy entirely cured the trouble. The sketch shows just how I did this work. This is a rough sketch from memory, and is just to show the idea, and no attempt is made to show the actual proportions. The shaded portion shows how a piece was set in to the center cam in order to throw the dial needle out farther at this point.

A very satisfactory job can be made by cutting back in the old cam in such a way that when the new piece is fitted in, it will make a lap joint that will give a good path for the needles to travel over. If the fitting is neatly done and then the piece brazed into place with a blow torch, it will make a permanent job. Would suggest using an old

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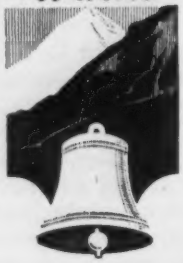

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BELMONT YARNS

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piece of center cam for the patch, and when all is completed, polished and case hardened, and it will do the work.

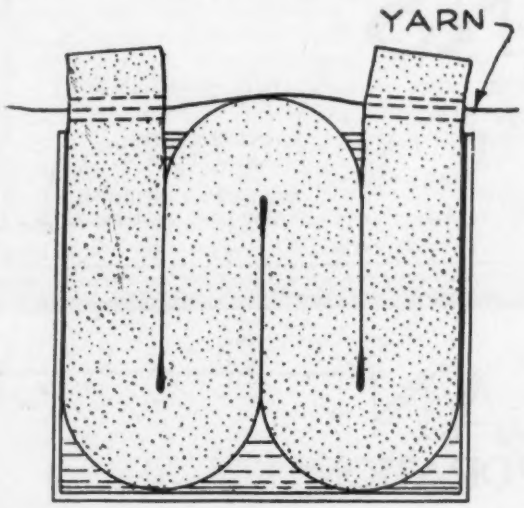
This trouble did not happen on all machines, but on just a few that appeared to have short cams in them, but it fixed the trouble for me. CONTRIBUTOR No. 566.

Overcoming Uneven Stitches on Full-Fashioned Work.

EDITOR COTTON:

One of your contributors recently submitted a problem as to uneven stitches on full-fashioned hosiery made from nine-thread Grand Double Extra silk. He wanted to know what might be the cause of this, and as I have had the same trouble, though not on this grade of silk, I thought that in answering him I might describe what we are doing along the lines of preventing this difficulty.

We first found our trouble to result largely from not having the silk properly moistened or conditioned. Going to the knitting needle dry, the stitch produced would be decidedly uneven. The method we use is to run it through the usual conditioning trough in re-winding it from the cones on which it is received. Then we use a sort of home-made conditioning cabinet in which the yarn is placed until the knitting machine is ready for it. This consists of an ordinary steel cabinet containing shelves on which the cones are placed after re-winding. We believe this prevents the changing and different atmospheric conditions of the mill building itself from having so much effect on the moisture content of the yarn. When it is desired for the knitting machine, it is placed in the boxes on the machines, where we always keep the necessary amount of moistening material. We do not let the cones sit outside, as we have found that when a knitter does this, and a cone remains in the room atmosphere for even so much as twenty minutes, we can detect a difference in the stitch after it is put back in the case and is knit into the fabric.



It was on the knitting machine itself that we made the most decided change in our practice, the one which resulted in the most amount of good. The conditioning troughs carrying the felts have metal supports in them on which the felts lie, and wicks are laid across the felts. The felts, as you know, are slit from the top, and the silk yarn is laid in this slot. I am sending along with this letter a sketch which shows how we re-arranged the shape of the felt in order to secure our better results. It will be noted that the felt is lapped twice in the shape shown. Instead of slitting the felts from the top of the ends, we took a screw-driver and made holes in it, on the order of buttonholes, at the point where the yarn passes through it. This feature gives us more surface for the yarn, which it will be noted, passes through these holes and over the top of the center lap of the felt, as shown. We first tried one in this shape, and compared the fabric on that section with the one from the yarn conditioned in the regular type of trough, and the results were surprisingly in favor of the new system, so we are adopting it. Furthermore, in order to get the same amount of conditioning on our footers, we had special troughs made for these machines and are equipping them in the same way. We first thought of doubling the felt one more time in order to make it fit in the regular wider through on the Reading machine, but this, as you can see, would have given an additional surface for the yarn to run on, so in order to get the same conditioning surface on both machines to insure that the stitches would match up, we are putting the new troughs on the footers also. We run 20-section footers and 18-section leggers. The troughs measure $2\frac{1}{4} \times 2\frac{1}{4}$ inches, by 27 inches long.

In case your correspondent who asked this question, or other readers, who might not have been advised regarding it, I might add that some throwsters have a process by which they treat silk especially for full-fashioned work, and this is a different silk from that we use in our seamless department. Therefore, if he is not getting this full-fashioned treated silk, I suggest that he try it also, as that might assist in the elimination of his uneven stitches.

Another point to check up on is the silk snappers. These might be out of adjustment. They might be coming down on all and yet not fully releasing the silk.

I would be very much interested if you could publish more material with reference to full-fashioned work in your "Knitting Kinks" department. With the development of this industry in the South, more and more men are becoming engaged in it, and I am sure would also like to get information, since there seems to be practically no published material on this subject.

CONTRIBUTOR No. 526.

EDITOR COTTON:

This is in reference to the inquiry regarding the possible cause of the unevenenness of the stitch in the sample of full-fashioned hose submitted. The inquirer states that the sample is made from 9-thread Grand Double Extra silk.

I hardly think the trouble comes from the silk itself, since this is an unusually good grade. However, the general appearance of the fabric, including the fact that the wales present a very uneven or wavy appearance, would indicate that the fabric is knit too dry; also the fact that a count shows there are about 42 courses to the inch would show that the stitch is knit too loose, especially for a 42-gauge machine.

It is not possible to offer a definite method of securing the proper moisture condition for full-fashioned knitting. This resolves itself into a purely local condition, depending, among other things, upon the speed of the winding machines, the relative humidity of the room, and other factors which will vary under different conditions, and each mill

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must work out its own salvation in this respect. It is much easier, however, to have too little moisture content than just enough.

Examination of the sample fabric shows the uneven stitch condition referred to, to be of the "washboard" character, giving this appearance to the fabric. Also, close inspection reveals that unevenness is regular, that is, it ap-

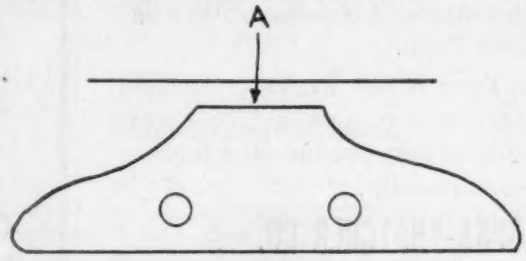


FIG. 1

pears in alternating courses, which would seem to place the blame upon some mechanical trouble.

This, in my opinion, would most likely be caused by an improper adjustment of the slur cock, which pushes the sinkers in to the needles. The sinkers are pushed in beside every other needle by the slur cock, while the alternating space is occupied by the dividers, which are operated by the catch bar.

A rough sketch of a slur cock is shown in the accompanying drawing. The point *A* operates to push in the sinkers. If for some reason either corner of this surface

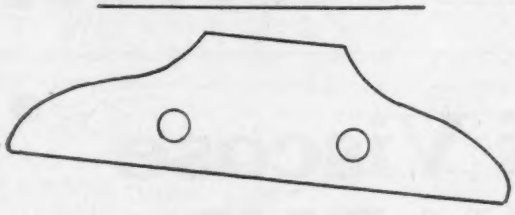
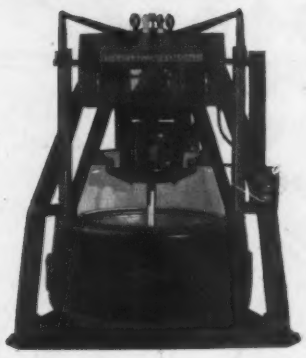


FIG. 2

should be pushed in slightly farther than the other, as shown in Fig. 2, the stitch made in the direction of traverse in which the "high" side of the slur cock point hits the sinker butt first, the sinker will be taken further in and the stitch will be *looser*, while the stich produced on the return traverse will be comparatively *tighter* because the "low" side of the slur cock point first strikes the butt of the sinker, not taking it in so far.

It might seem, superficially, that the stitch would be the same on both traverses, because the actual closest point of contact is the same. This, according to my experience, is not true, however, because the sinker is affected most by the point or force of the initial contact with the slur cock point. Therefore, if the "high" side strikes it first, the tendency will be to drive it further, producing the looser stitch, while on the return traverse, it is struck first by the "low" side, with the comparatively tighter stitch as a result. In the setting or adjusting of the machine, there is a clearance left between the sinker head and the sinker butt when the sinker has reached the end of its normal movement inward. The best gauge for this would be the thickness of the thin sinker used on the gauge of the ma-



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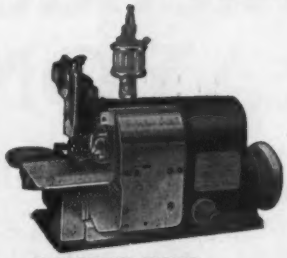

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Singles in A and B grades, regular and special twists for weavers, knitters and braiders.

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chine being run.

The "high" side of a slur cock out of parallel striking the butt, will tend to destroy this clearance, which is provided for the purpose of imparting resiliency or "give" to the stretch.

I do not know that this will be of help to the inquirer on this particular problem, but the regularity with which the uneven stitches occur in his sample suggested this as a possible cause of his trouble.

CONTRIBUTOR NO. 527.

Union Dyeing on Hosiery.

EDITOR COTTON:

I would especially like to see your "Knitting Kinks" department publish something about the union dyeing of combination silk-and-rayon yarn, and mercerized. I am sure there are others who also would be interested in this, since, I understand, there is a strong probability at the present time that there will be a market for a 50-cent retail product in ladies' seamless goods made with this twisted yarn. The dyeing of this fabric is especially difficult in securing a good union shade on the three different fibers used.

In order to start the discussion on this, in the hope of influencing other mill men to describe their methods, I will outline the system we use. If anyone has any comments to offer on it, or any suggestions to make, I would be pleased to have them make them by sending them to "Knitting Kinks" to be published. Our method is giving us very good results, but it is not perfect, of course, and anything that might improve it will be welcome.

We usually dye our goods in 100-pound lots. We make a men's half-hose out of a twisted silk-and-rayon yarn, with mercerized heel and toe, to be dyed solid colors.

We first boil out for one hour, using 7 per cent of a high-grade degumming oil. Then we give the goods a hot water rinse at about 180 degrees F., then a warm rinse at 120 degrees, and then a cold rinse.

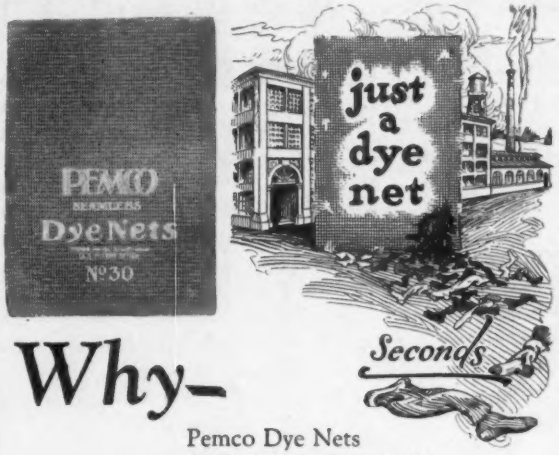
The dyeing process is started at 120 degrees, and two-thirds of the dye is added at this low temperature. We heat it up to a boil slowly, and then add the rest of the dye. If we put all the dye in at once, the cotton yarn would take all of the dye, and if we started it at higher temperatures, the rayon would grab all of the dye. We use direct colors, such as National Erie Black NR, entirely on this class of work. We use common salt, and add five to ten per cent to the bath along with the second batch of dye at the boil.

I hope you can get some good discussion on this.

R. T. (N. C.)

Six Per cent Oil Content For Rayon.

Six per cent oil content has been proposed as a standard for rayon yarns by the Bureau of Standards of the Department of Commerce. This recommendation was worked out following investigation which divulged a wide variance of practice. This content was proposed as a maximum, to be based on the weight of the conditioned sample. In determining it, consideration was given the softening qualities of an oil content, its cost, and its removability, as well as the relation in price between rayon and oil.



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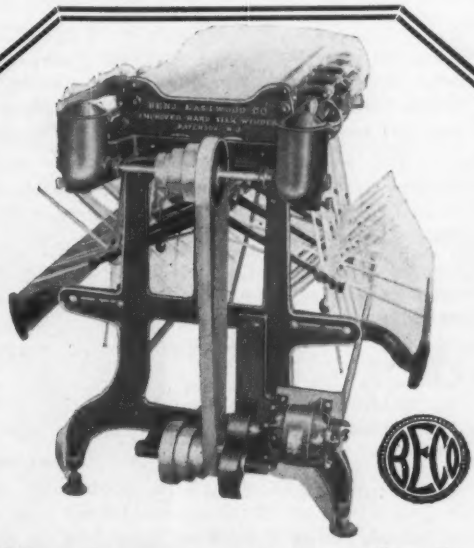

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The Yarn Market

Philadelphia, Pa., April 13th, 1927.

During the first of the four complete weeks preceding this writing, there was comparatively little activity in the Philadelphia cotton yarn market. Conditions remained more or less at a standstill, largely because factors were anticipating the impending final ginning report from the Government. Transactions occurring, however, indicated the points of strength in the yarn list. It seemed that while carded yarn spinners' rates retained a firmness because of a similarly strong situation in the cotton used, combed yarns were somewhat stronger; and furthermore, the knitting end of the business appeared to be more active from a buying standpoint than did those customers who use yarns from this market for weaving purposes.

The final ginning figures, announced on Monday of the next week, showed something upwards of a million bales under the Government's estimate, with a resultant bulge in cotton quotations. This price improvement, however, failed to affect the cotton yarn rates in this market, which continued along fairly strong, with prospects of a more or less permanent rise becoming more definite. During this week it developed, apparently, that buyers had been influenced in their deliberating actions as to purchasing by sacrifice sales of yarn, which created the impression that prices were settling down, inducing them to wait further before committing themselves on other than immediately required yarns. Spinners as a rule continued to hold their prices as well as operate on a production basis, which was not wholly understood by some. It was pointed out that recently there has been a trend toward the disposition of mills' yarns directly to consumers in certain sections, so that the business transacted here really might not represent the true condition for the industry as a whole.

It was interesting to note at the close of the month of March that one portion of the yarn list, the carded yarns for weaving, had remained practically at the same price level for almost two months. The exceptions to the rule experienced upward revisions to a slight extent. The finer counts of carded yarns for knitting showed similarly stronger price activity, while the coarser counts felt possibly some reducing influences. As has been stated, combed yarns experienced renewed vigor and strength during the month of March, this being the first general upward change occurring here for some weeks.

Last week included the annual convention of knitters together with the accompanying exhibition at the Commercial Museum. To this place most of the local yarn dealers wended their way, and there concentrated their efforts. There was considerable value derived from the contacts formed, but as to business, there were no encouraging reports coming from the show insofar as actual sales made were concerned. Some business was placed, but it was nothing of an important amount. The action of the knitters in ordering an investigation into alleged price-fixing on the part of yarn mercerizers naturally attracted attention here, where discussion revealed the general opinion that the establishment of proof of these allegations would be indeed difficult and that the mercerizers had no especial cause for taking such action.

The week as a whole produced nothing that could be considered as of extraordinary importance so far as market trends are concerned. There were those who expected the convention during the week to stir up activity, but the knitters attending the exhibition left no sizeable business to speak of with yarn dealers when they returned to their homes. No single group could be cited as the month's best customers, but perhaps the stronger situation in combed yarns can be called one of the outstanding features of the market's developments since the last report here.

The remainder of April, and the month of May, it is felt by some factors, will prove a test period for the market, and some predict a recovery on a stronger price basis. On the other hand, there are those who feel that any permanent activity will be done on a lower price level.

Philadelphia prices on April 11th follow:

Single Skeins.

4s to 8s	24½	10s	25
12s	25½	14s	26
16s	26½	20s	28
24s	30½ @31	26s	32
30s	33 @33½		

Single Warps.

8s	25½	10s	26
12s	26½	14s	27
16s	27½ @28	20s	28½
24s	33 @33½	30s	34½ @35
40s	43 @44		

Carpet and Upholstery Yarn in Skeins.

8s 3-4 hard white warp twist	24
8s and 9s 3-4 tinged tube	21@22
8s 3-4 hard twist waste	20½ @21

Two-Ply Skeins.

8s	24½	10s	25
12s	25½ @26	14s	26½ @27
16s	27½	20s	28 @28½
24s	31 @31½	26s	32 @32½
30s	34 @34½	40s	43

Two-Ply Warps.

8s	25½	10s	26
12s	26½ @27	14s	27½
16s	28	20s	28½ @29
24s	32	26s	33
30s	34½ @35	40s	43 @44

Frame Spun Carded Yarn on Cones.

8s	24	10s	24½
12s	25	14s	25½
16s	26	18s	26½
20s	27½	22s	27½ @28
24s	29½	26s	30
30s	33	40s	41
30s double carded	33 @33½	30s tying in	31 @31½

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	36 @37	20s	39 @40
24s	41 @43	30s	44 @45
40s	48 @50	50s	54 @55
60s	62 @65	70s	72 @75
80s	82 @85		

Single Combed Peeler Yarn and Cones.

18s	38	24s	41
30s	44	36s	46
38s	47	40s	49

Mule Spun Carded Yarn on Cones.

10s	29	12s	30
14s	31	16s	32
18s	33	20s	33½
24s	34	26s	35
30s	36	40s	45

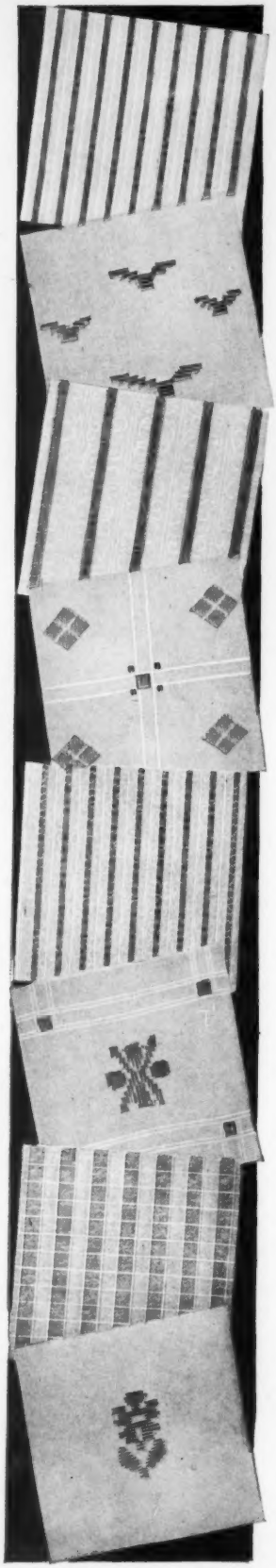
Mule Spun Combed Peeler Yarn on Cones.

10s	38	12s	38½
14s	39½	16s	40½
18s	41½	20s	42½
22s	43½	26s	45½
28s	46½	30s	47½
36s	50	38s	53

"Jak-Tung" Trucks.

A very descriptive designation, is the new trade name, "Jak-Tung", which has recently been applied to the small, three-wheeled truck manufactured by the Howe Chain Co., of Muskegon, Mich., that is used for either hauling or storage.

The "Jak-Tung" truck consists of a platform, equipped with two malleable iron wheels at the rear, and a malleable iron draw bar in the front. The jack tongue, from whence the truck takes its name (with wheel) hooks into the draw bar leg, and, by a downward thrust of the handle, the load is raised, and may be hauled anywhere. It is built in 17 different sizes and 3 models.



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"Ebard" Shirtings converted by E. O. Barnard Co., Inc., New York City.
"Novelite" Draperies converted by A. W. Baylis Co., New York City.

Ad. No. 226. Printed in U. S. A.

COLOR

THE MASTER SALESMAN

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Multicolored curtains and overdrapes for windows are recent developments, but already the sales of these fabrics are far ahead of the white and plain colors. Women want pink rooms, blue rooms, children's rooms, and each new demand means increased sales.

Likewise in shirtings, the modern trend is toward a wider use and range of colors.

Among the leading fabrics that cater to the demand for COLOR are "Novelite" Draperies, "Pickwick" Draperies, and "Ebard" Shirtings. COLOR is the dominant feature of these products. This makes it a vital necessity that the component yarns be colored by an organization having facilities for dyeing and delivering yarn in a wide range of colors on short notice.

One of the reasons for the popularity of Franklin Process colors is that the very nature of the process permits consistently better deliveries than when the yarn is colored by other methods.

Quick delivery of dyed yarn to the mill is of vital importance to the merchandiser in meeting the demands of an ever-changing market for new and timely designs.

We offer you the same advantages that have contributed to the success of "Novelite," "Pickwick," and "Ebard" products — prompt deliveries, efficient laboratory service for matching shades, thorough penetration of every fibre of the yarn, and the Franklin Package which permits maximum economy in handling the yarn.

A Franklin Package of Dyed Yarn.

It will deliver freely by rotation or over end.

With these services, is it not possible that you, too, will find more profits through the increased use of COLOR?

Put your problem up to us and let us give you our opinion.

It costs nothing to find out.

Write us to-day.

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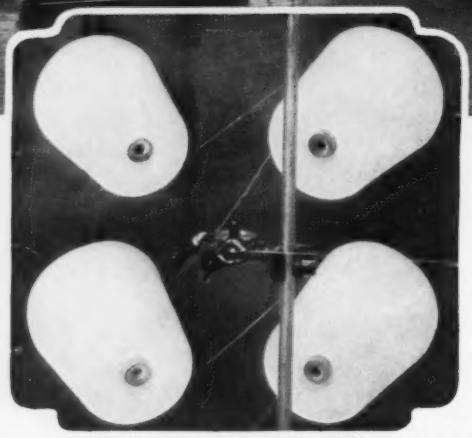
LEESONA UNIVERSAL HIGH-SPEED WARPING



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REDUCTION IN LABOR COST

This highly important saving is effected by the Leesona Universal High Speed Warping system. 1350 spooler spindles and 17 slow-speed warping units have been replaced in this mill by only 672 high-speed, cone winder spindles and four high-speed warping units.

The labor cost of warping and creeling has been reduced one-half to two-thirds; a great saving in floor space has been effected; there has been a marked improvement in the quality of the warps.

Warping is continuous except when removing a full beam or when an end breaks, due to the magazine cone supply feature of the creel. Dead yarn is entirely eliminated. Exceptionally uniform warps are produced since each end is tensionized uniformly in the creel. The original elasticity of the yarn is retained, as there is no inertia to overcome, as when warping from rotating supplies.

Further details regarding this system, including the No. 60 GF machine which prepares the cones, will be furnished on request.

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Ad. No. 5—Printed in U.S.A.

The Knit Goods Market

Larger hosiery manufacturing organizations than ever have existed, a definite drift to concentration for eliminating lost motion and effecting cuts in overhead cost, and less of national distribution are forecast in well outlined moves among manufacturers since the Gotham Silk Hosiery Co., took over the Onyx Hosiery Inc. That was last year's more sensational coming together of rival manufacturers selling to the retail trade. Even more startling pooling is indicated for this year.

Recent announcement of a merging of five well known mills distributing direct as wholesalers was followed by the appearance of a rumor of three establishments of greater magnitude planning a combine. That a merger is contemplated by the parties mentioned in connection with the report is not denied, but how far the project has progressed and what is the prospect are matters which those interested will not discuss for publication, further than, as one of the manufacturers put it, "This is going to be the biggest direct-to-retailer organization in this hemisphere."

A merger that would represent more capital and production than either that which already has been tentatively effected or the one that is believed to have taken practical shape is being talked of in a quiet way. It would comprise three first magnitude mills selling to jobbers and one selling to retailers. What will come out of it all is problematical, but trustworthy information as to plans under way points to at least three powerful organizations as this year's crop of mergers.

The Gotham-Onyx transaction whereby the latter was removed as a manufacturer probably supplied the cue for the amalgamation of the five mills first referred to, and this in turn gave the inspiration for a coming together of three involved in a rumor for which there appears some ground. That a pooling of issues by manufacturers selling to jobbers should be in contemplation is not surprising when it is taken into consideration the fact that practically all of the larger wholesale distributors, known mainly as such, also are manufacturers—Brown Durell Co., for example. Then there are constant additions to the number of manufacturers deserting the wholesale field and selling as independents to the retail trade, and it will not be overlooked that manufacturers here and there are establishing retail stores, after the manner of the Dexdale, in Lansdale, Pa., and the Artcraft, in Philadelphia. Mergers may be necessary for the preservation of some of the large manufacturing establishments, for there is the chain store and catalog house business to be taken care of, and with the establishing of department stores by Sears Roebuck & Co., there is opening up a new field for mammoth production by powerful organizations yet to be formed. Their coming would appear to be hastened by conditions in the hosiery trades generally, conditions which, while fundamentally sound, are not entirely satisfactory to manufacturers, who to some extent, are in the position of the dog being wagged by the tail. Strong merchandising organizations are in the saddle and will be so long as competition is keen and production more than ample and not well controlled.

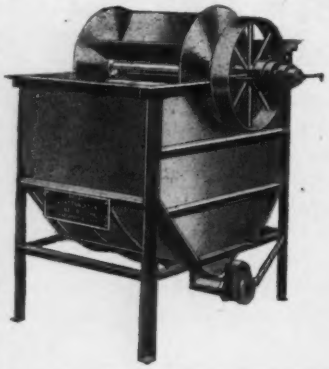
Hosiery represents probably the more active division of textiles as a class but for most factors the situation is unsatisfactory. Prices, considering one mill with another, are out of line, so that while much business is being offered, a great part of it can be gotten only in sharp competition, often at the expense of profits. Dealers' details are slow and, in consequence, plant operation unsteady and at times precarious. It is questioned whether there is not more steadiness in the seamless than in the full-fashioned division. In the latter there are excess stocks of goods that are undesirable except for price. In the seamless there is a sustained effort to regain some of the ground that was lost, and there are fewer mills, comparatively, in competition.

While there are few full-fashioned mills not operating full time, there is some curtailment of production, and it is believed that when official statistics come out they will show a smaller output in April than in March. But this will be due to elimination of overtime work. In a mill in Reading in April several knitters were on a 59 hour week schedule temporarily, at a time when there was extraordinary seasonal demand for spot delivery goods. Two knitters made each 140 dozen pairs in a 59-hour week. Indicative of an unbalanced situation, two or three larger mills dispensed with some of the help. On the other hand, in several factories where knitters have been operating one machine each they now operate two, with a helper for each.

A manufacturer who adheres to the one machine per man employs a helper for each two machines, and reports fewer seconds. Under this plan the irregulars in March were brought down to less than six per cent of the entire production, comparing with eight per cent in a well known southern mill making high grade lines, with a like division of knitters and helpers. Manufacturers who mark their seconds as such, using an indelible ink, are giving much thought to the matter of how best to reduce the number to a minimum. Price buyers often are willing to pay a dollar more per dozen for full-fashioned silk seconds unmarked than if indelibly branded. It is alleged they select the least imperfect and sell them as firsts or as is ,disposing of the more seriously defective among popular price stores where the ethics are more flexible.

Of black bottom and constrasting heel hosiery supplies have been far short of demand. But it is believed among most manufacturers that those who early went along with the fad have skimmed the cream off the business for this year. Whether it will survive the summer season is a moot question. At the moment there is little to indicate whether it will or will not. It may be significant that a few of the leading manufacturers who have adhered to strictly plain single colors say they have had virtually no call for the novelty. Yet a mill selling to the retail trade, principally for a large account in the Central West, has orders for the constrasting heel for deliveries as late as July, black on white being specified by one important retailer.

The black heel on white is coming from spring needle machines in rather large quantity, this type stocking fetching a dollar a pair in retail stores. With the appearance of the novelty in the dollar class it was felt in some quarters the novelty was approaching the stage of the commonplace and that therefore it was a question of but a short time when the high price full-fashioned would be discarded by discriminating women. But when that happens, it is



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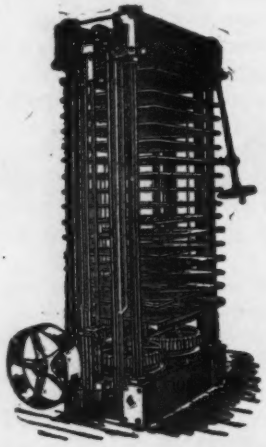

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predicted, there will have been introduced some innovation along different lines, for, it is reasoned, woman must have something in the way of a departure from plain colors and standard construction.

Manufacturers of seamless pointed heel hose have met with little encouragement, it is stated by several who discontinued the line. Yet others are installing pointed heel equipment, believing it is one conception likely to remain popular for some years, because of the slenderizing effect on the ankle. Some full fashioned mills, while knitting only the square heel, have narrowed it materially, and it is regarded an improvement over the standard, as it conforms to original lines, is not so squatty and contributes to the slenderizing effect.

What next in women's silk hosiery? is the burning question among manufacturers and distributors. Much of the 42 gauge machinery is reported being diverted to eight thread goods, which would seem to imply that chiffons are regarded in some quarters as having seen their peak. A common prediction is that chiffons will be knitted of finer gauge, that the price will detract from their popularity, except among the more exclusive element, and that fewer will be used. It is noted that much of the new equipment installed this year will be of 45 and 48 gauge. The finest stocking thus far produced in an American mill is a one-strand 57 gauge, shown for the first time in public a few weeks ago. It is from the Propper Silk Hosiery Mills, Inc., on Long Island.

There is unquestionably a swing toward a heavier fabric than has been common, and it seems not unlikely that the full fashioned hose of the near future will represent the two extremes in weight and a happy medium. An order for 1000 dozen pairs of 39 gauge 11-strand was offered a few weeks ago by a buyer who said he would have an outlet for about that quantity each month. This may be viewed as an instance pointing to a drift, in some quarters, to service weight hose. It would be welcomed by owners of 39 gauge machines, of which there are a considerable number in operation among the older mills. But the 42 eight strand has been picked as a compromise stocking, fitting in the groove separating the very fine and the one-time standard gauge and weight.

Although it has been a stock prediction for some time that full fashioned production was being overdone, it is significant that some seasoned manufacturers are installing machinery as fast as it can be delivered, and yet not discarding their seamless equipment. The Chipman mill, Easton, Pa., shortly will have a considerable battery in operation, removing the seamless machines to the factory of the Hanes Hosiery Mills Co., at Winston-Salem, N. C., where, probably the Easton stage of production will be maintained. While Cooper, Wells & Co., St. Joseph, Mich., will set up a full-fashioned mill at Decatur, Ala., there is no intention of disposing of their seamless plant. Leading makers of seamless therefore will continue to produce the line, while going into the full-fashoned field, referred to so often as overcrowded. The situation, from the production standpoint, is becoming interesting and more enigmatic.

It may be significant as indicating a returning confidence in seamless construction that the Cadet Knitting Co., Philadelphia, making high grade full-fashioned, sold to retailers direct, recently brought out a woman's seamless silk under the trade-marked name Narroto, which im-

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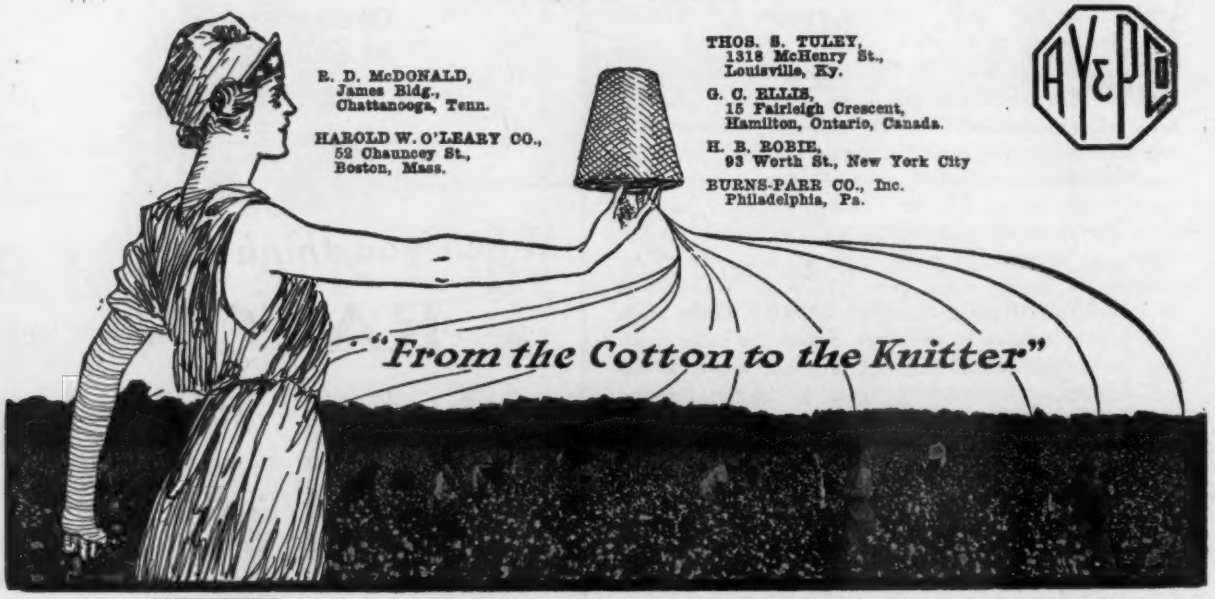

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plies a narrowing of the toe, effected by the dropping of needles, as in full-fashioned. In their description of the new stocking the company say they have succeeded in eliminating broad toes and wide feet, insteps and ankles so objectionable in ordinary seamless hose." The stocking goes to retailers for $8 a dozen and therefore is designed to sell for one dollar a pair, a price that sustains demand for good seamless. When a good full-fashioned is produced for that price bracket, present seamless popular at that figure will be a 75 cent proposition, say some manufacturers of the circular knit.

Several very attractive lines of all-rayon boot hose come from southern mills having an edge on their competitors in the North. A 260 needle stocking of rayon to welt is available to jobbers for $3.10 a dozen, and a number of not quite as fine gauge is priced $2.50. From a southern mill also there comes two lines of vertically striped half hose, full looping, priced $1.75 and $1.85 respectively, to go over the counter for 25 cents a pair. Both are big selling numbers, and they are held as representing an achievement that may detract from the success maintained by half dollar grades, and create a better demand for high grade silk, adapted to the trade of the better class stores. A mill in Reading, Pa., specializing in a dollar fancy silk sock, reports production sold up to July. Some of the manufacturers of medium price socks in novelty effect are reported not so well situated, a few being in need of business. When the novelty craze has disappeared, some believe, there will be a drift to full-fashioned silk in plain colors. For some time their production has been light and, apparently, is declining.

Among the year's better items in hosiery are misses fancy and plain silk-and-rayon long hose, and men's and juvenile golf hose. A few mills having distinctive lines have been operating to capacity for some time, and were barely able to keep output abreast of demand, while equipment adapted exclusively to staples was to a great extent idle. Misses seven-eighths sports hose are a feature in sports where there is outstanding market briskness.

One of the busier establishments specializing in children's hose is the Max Pfau Hosiery Mill, in Reading, which represents an exception when it is not on a capacity output basis and sold ahead. The company inports fancy tops from a mill in Germany and maintains a line of exclusive designs. The company also is a producer of infants' socks, an item that in the last month or two has been showing marked strength for most mills. While rayon lines for the 25 cent price bracket appear to be the outstanding popular type, with 35 cent goods ranking second, there is said to be developing some demand for a fine gauge plain lisle. Such a sock, knitted full-fashioned, comes from a few foreign mills, and has attracted enough attention in the trade to give domestic manufacturers an inspiration for exploiting the circular knit as a half dollar proposition. Low price for the rayon sock has served to make it commonplace, since it is sold in certain chain stores for 10 cents a leg, and this encourages the belief in some quarters that a plain fine gauge lisle would be well received.

Of certain mill lines of popular price socks for infants there recently was a scarcity, and even now some jobbers are complaining of late deliveries. This situation can be ascribed wholly to the tardiness of jobbers with their details and the unwillingness of manufacturers to put goods in stock for the procrastinating. In one instance a jobber had contracted fairly early, for 42,000 dozen pairs, but supplied details for only 15,000 dozens. When some weeks ago he sent specifications for the remainder of the order the manufacturer was so well sold ahead that this jobber could not get desired deliveries. "We are regular customers and you should have taken care of us," the buyer said, to which the manufacturer replied, "we had no way of knowing what you would require and could not afford to reject other orders while waiting for you to complete yours. We are no more willing to carry stock for our trade than you are for yours." The jobber of course located ready-to-deliver socks elsewhere, but had to take what he previously had rejected, thus paying the penalty for unnecessary late detailing.

Underwear.

There is a fair measure of primary market trading in men's knit underwear, but it is confined largely to distinctive and trade-marked lines, more particularly in light weight. But even in the summer garments the looked for spring briskness did not reach the average seasonal stage, for which there may be several explanations. As light weights now are on display the year through in most retail stores, dealers are less interested in seasonal openings, and buy as dry goods distributors ordinarily buy all-year staples. Jobbers therefore do not have the spring spurt as in former years, and their preparations for summer are not on so large a scale as in past years. Thus there has not been that pressure for spring deliveries, although the year's volume of business may show little fluctuation.

Along with the further trend to the use of summer weights for winter wear is the drift to athletic lines, in which the cut-and-sewn seems to enjoy a lead. The more popular of these are the trade-marked and nationally advertised nainsooks of a few powerful manufacturing organizations, who this year have been making extraordinary effort to not only hold the ground they had gained but to enlarge their fields of distribution. This undoubtedly has been a factor in the more restricted buying of ribs and bal briggans, the latter apparently yielding more and more in competition with the ribs and nainsook, and similar lines.

All light weight cotton underwear has a strong rival in rayon, and this fabric is, unquestionably, making headway. A high grade rayon union suit goes over the counter for $3, and shirts and drawers at $1.50. One line in particular carries knitted-in pin stripes and is of a high order of finish. It is reported having an increasing sale. It appeals to good dressers, especially to men addicted to outdoor sports and who usually disrobe and don sports apparel under circumstances calling for something in underwear above the average in texture and appearance. With a tendency toward dressing up, man is coming to be as captious about his underwear as the dressy flapper, and he is turning to rayon.

There is a wide-open good market for men's summer underwear, but demand is distributed among so many types that to manufacturers and distributors it presents a situation little less confusing than that in either of several divisions of hosiery. What might be advanced as a pretext for piecemeal buying of summer lines hardly could be urged in relation to heavy weights.

The markets for winter cotton ribs has shown marked

improvement since announcement was made by a number of manufacturers that they had withdrawn or were about to withdraw prices for the earlier period. Most of the more important distributors are understood to have placed orders for the bulk of their requirements while the lower prices prevailed. But it is observed there since has been some contracting by jobbers who might be assumed to have gotten in more opportunely. It is the same old story—placing dependence on mills to carry stocks and taking a chance on getting the goods late at early prices.

While a nice volume of business had been booked comparatively early by a few manufacturers of nationally known high grade lines, there was little honest to goodness buying until along in March. Since then some manufacturers, to whom the outlook had been discouraging, have had a steady flow of orders, and a few might be mentioned as having sold up their production to the end of July. This is by no means general and there are reasons for believing that around 40 per cent of the year's business is yet to be placed. But with cotton steady and mills almost a unit on holding for their established prices, it is felt that buying now will proceed in more orderly fashion, but that actual pressure on mills will not be experienced until well in the last quarter of the year.

It is the aim of distributors to keep their assets liquid, so far as that may be possible, and as heavy weight underwear runs into considerable money and the average retailer is as uncertain as a trick mule or next week's weather, jobbers probably will at no time be burdened with stocks. In only a few sections, so far as can be ascertained, have retailers made commitments for winter weights.

Various recognized authorities say they can detect signs of a comeback for women's cotton underwear, maintaining that in the finer gauge it will have a fairly good market. This view seems to be supported by activity among Pennsylvania mills making light weight garments. Numbers are operating to capacity and some are crowded with orders, while others are turning off around 60 to 70 per cent of capacity output. Bleachers up through the Schuylkill Valley report they are busier than in any recent spring season. Conditions among the bleacheries are viewed as a barometer of the situation in the underwear trades.

At the rate of progress made by rayon flat underwear, it seems logical that rayon ribs will cut a swath wide enough to be felt in the silk and cotton divisions. It is the prediction of some that a rib knitting machine, which came on the market in a small way quite recently, is promising of revolutionizing the rayon underwear industry, repeating in this field an achievement in cotton underwear. That rayon and silk underwear will be knitted in a commercial way on ribbed machines in the near future seems a safe guess, predicated on an intimation given by a representative of the Charles Cooper Co., builders of ribbers.

Knitted Outerwear.

More sensational than any style development in knitted outerwear is the program outlined a few weeks ago by S. B. & B. W. Fleisher, worsted yarn spinners, Philadelphia, whose yarns are used extensively by sweater and bathing suit manufacturers. According to the company's announcement, Fleisher special yarn in any garment is guaranteed against defects. A tag, or ticket, will be attached to every sweater, or other garment, made from Fleisher guaranteed yarn, the tag stating in effect that if the ultimate buyer finds the yran unsatisfatcory the garments may be returned to the Fleisher mill, to be replaced with a similar one. The sweater is identified by the tag put upon it by the manufacturer, who, however, does not appear in any adjustment, that being made between Fleishers and the consumer directly.

What will be the effect of the Fleisher plan on the business of other spinners and the business of manufacturers not using Fleisher guaranteed yarn is problematical. The manufacturer will pay a higher price than for yarn carrying no guarantee and doubtless will retrieve the difference in a higher price for his product. For carrying the program into execution, the Fleishers have procured organization of an executive committee made up of five sweater and bathing suit manufacturers. This is viewed as strengthening the plan, and it is to be assumed that it will be the more far-reaching in effect from the fact the Fleishers in the half century of their existence as spinners have spent upwards of $15,000,000 in national advertising and therefore enjoy a prestige that may be a powerful factor in creating demand for garments made from their guaranteed yarn.

Sweaters are less active than they should be at this stage of preparation for the fall and winter season. Some manufacturers are well engaged on early small orders, but, it is stated, have little substantial business ahead. Those specializing in women's spring and summer coats have nothing of which to complain, although there is a promising outlook for shakers and other popular models for fall, they are being taken in only a very conservative way. Another buying movement is expected to develop in May, and it is thought most representative mills will be pretty well supplied with business for the remainder of the year.

A comparatively few manufacturers boast of satisfactory business in bathing suits. These few seem to have booked more business to date than in the corresponding period of 1926. Last year's bathing season at the northern resorts was a disappointment to all, leaving retailers with some carryover stock. Dealers are, obviously, hesitant to go ahead for the coming season, and that is the one explanation for their late placing of orders.

Among the Knitting Mills.

Announcement of the removal of the S. S. Miller Hosiery Mills plant from Reading to Burlington, N. C., has been followed by a flood of reports of other manufacturers planning to migrate to southern fields. At least two in Reading are known to contemplate removal, and it is stated an underwear mill in Boyertown will be transferred to a southern city. While there seems little doubt the reports of this character are more than mere gossip or represent at least an intention to investigate as to the feasibility of removal, manufacturers involved in the rumors will not permit use of their names until after definite conclusions have been reached.

Stimulus for the desire to migrate is supplied in reports of numbers of mills being established in the South, while in some sections of the North so many plants are disappearing, others tottering in competition. Besides, there is an operating cost differential that bobs up as a potent factor. This is coming to be no less a factor in the

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full-fashioned field than in the seamless. The Powell Knitting Co., Philadelphia, for some time have been operating a branch seamless plant in Spartanburg, S. C., and, it is understood, are well pleased with their surroundings and the success of the branch.

A northern manufacturer who has had some experience with textile plant operation in the South expresses himself as enthusiastic over that field. He makes the point that those who move South to escape the rigors of winter or economic conditions in northern cities and are disappointed with results, overlook the importance of adapting their methods to locality and, instead, try to adhere to practices prevailing in sections they are vacating. Theories, he said, often must be revised to jibe with environment. It is our policy, wherever we settle, to fit ourselves into the new groove that we select, instead of making a groove to fit in with former practices elsewhere. We are fortunate in having help that seems to like us and we like our employees, so there is satisfaction in the congeniality and we and our employees are making more money and we have fewer troubles than when we were bucking conditions that caused us to move South."

It is estimated by sellers of full-fashioned knitting machines that by the end of 1927 there will be in operation in the South no less than 35 full-fashioned hosiery mills. Whether any of the additions in the southern field will be made at the expense of the industry in Philadelphia is undetermined. But a well-known executive said a few weeks ago that within five years there will not be a half dozen full-fashioned mills in that city unless manufacturers "break with the knitters' union." The manufacturer quoted has acquired a site for a mill about 25 miles from the city. He says it was necessary to do so, in order to be prepared to compete with southern mills. Acquisition of an out-of-town mill site simply was a step in the way of preparedness, he says, as he will quit Philadelphia only when compelled by force of circumstance to do so. "I look for very great expansion of the full-fashioned industry in the South," he said, "but most of it on southern capital."

The Colonial Knitting Mills, Philadelphia, manufacturers of spring needle hose, broke ground several weeks ago for a full-fashioned mill to be established in Berks county, Pa., a few miles out of Reading. It will be equipped with 20-section 42-gauge machines. The first complete unit will comprise 54 machines, some being of the Wildman Richter construction. The mill will occupy a site on a 50-acre tract adjoining the borough of Mohnton. The Colonial, of which H. A. Morris is president, a few weeks ago acquired the plant and business of the Tulip Hosiery Co., in Philadelphia, being thus in position to put a line on the market in advance of starting the mill at Mohnton, which, it is expected, will be on production in a small way by August.

Daum-Rogers-Spritzer Co., knit goods jobbers, New York City, have plans for a full-fashioned hosiery mill to be established at Denver, a Pennsylvania town not far from Reading. Residents of the community are supplying funds for the erection of the building, their investment being in bonds secured by mortgage on the property. It is stated Reading machines will be installed.

Phoenix Manufacturing Co., of Little Falls, N. Y., will establish a plant at Statesville, N. C., to cost $600,000. Lockwood, Greene & Co., Charlotte, are the engineers. The mill, making knitted woolen and cotton goods, is the first of its kind to remove to the South. Products of the new plant will include sweaters, lumberjackets and flat knit goods.

Grace Hosiery Mills, Inc., Burlington, N. C., have been incorporated by R. A. Maynard, J. E. Moore, E. H. Scott and J. I. Somers. Mr. Scott is former superintendent of the Sellers Hosiery Mills of Burlington.

Aycock Hosiery Mills, Huntsville, Ala., are installing a number of new hosiery machines.

Cooper, Wells & Co., of St. Joseph, Mich., will erect a full-fashioned hosiery plant at Huntsville, Ala.

Acme Hosiery Mills, Asheboro, N. C., and the Asheboro Hosiery Mills, of the same place, will both erect buildings and begin full-fashioned hosiery plants.

It is understood that the Alden Mills, New Orleans, La., have purchased machinery for the manufacture of full-fashioned hosiery.

Elliott Knitting Mills, Hickory, N. C., also will install full-fashioned hosiery equipment in addition to their seamless production.

Charles H. Bacon Co., Lenoir City, Tenn., are developing an improvement program involving the expenditure of several thousand dollars.

It is understood that William M. Pepper, president of the Cadet Knitting Co., Philadelphia, heads a merger of the Cadet, the Lehigh Silk Hosiery, Philadelphia; Lansdale Silk Hosiery Co., Lansdale, Pa.; Kraemer Hosiery Co., Nazareth, Pa.; and Oscar Nebel Co., Hatboro, Pa. The merger, it is understood, involves $15,000,000.

A Rumor Without Foundation.

Hemphill Company, manufacturers of seamless hosiery machinery, today denied emphatically that it has now, or ever has had, any interest in any way, shape, or form in any concern dealing in second-hand machinery.

The rumor has been persistent for some time past that the Hemphill Company was using second-hand machinery dealers or other means of trading in old or used "Banner" machines, and the Hemphill Company wishes it definitely known that it has no such connection. The business of the Hemphill Company, its president states, is to manufacture up-to-date machinery, and the company urges caution and care on the part of hosiery manufacturers contemplating the purchase of old or used hosiery machines. The types of hosiery which are strongly in demand at this time are made much better and more profitably on new equipment.

Standard Length for Seven-Eighths Hosiery Cuffs.

A proposed standard length of three inches for the folded cuff of children's seven-eights hosiery of all sizes is recommended by the National Association of Hosiery and Underwear Manufacturers. The Association also recommends a standard tolerance of one-quarter inch, plus or minus, from this length.

This standard length and tolerance report is the result of a study made by the Research Associate of the Association, in cooperation with the Bureau of Standards of the Department of Commerce, Washington.

The Association's survey was made on a large number of samples of children's seven-eights hosiery, made in a large variety of patterns, and employing various types of yarns. The results showed a difference of less than one-third inch between the mathematical average of the samples examined and the proposed standard.